The Builder.

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THE degree of exactness to be looked for in what are called "Architects' Estimates," is a question involving several considerations, and which leads often to much difficulty. The same ignorance touching the architects' functions and position, to which we have often alluded in other matters, has on the one hand, brought most unjust obloquy on the profession, in respect of the inaccuracy of their estimates, and on the other, has led individual members of it to practice deception and act systematic falsehoods for their own advancement. An actual occurrence affords a more popular means of illustrating errors and evolving views than abstract reasoning, and we will, therefore, put before our readers the particulars of what followed a competition of designs a short time since. Our attention has been called to this particular competition several times by parties interested in it, but circumstances have led us to avoid referring to it till now.

In April last, the governors of the Pawnbrokers' Charitable Institution, invited architects, through our pages, to submit designs for a set of alms-houses. They stipulated with the architects who applied for particulars, that the building was not to cost more than 1,500*l.* to 2,000*l.*, and that the author of the most approved design, if not employed to superintend the building, should be content to receive the sum of *twenty pounds* for his drawings. Thirty-two designs were sent in, and at a meeting on the 6th of May, one of them was selected by ballot as the most approved, and found to be by Messrs. Elmslie and Lee. Two others were then balloted for, as next in merit, and to the authors of these, Mr. Woodman and Mr. Cooper, the sum of ten guineas each was awarded.*

At the meeting it was said that the first-named architects had stated that if their design was accepted, they were prepared to introduce builders who would carry it out for the sum stipulated, namely, 2,000*l.* It was accordingly moved and carried unanimously, that they should be employed to superintend the building, provided they obtained a tender to execute it for the sum named, from parties who should be approved of by the committee.

A sub-committee was afterwards appointed to make the necessary arrangements with the architects, and their first act was to inquire of the latter whether they would charge for the working drawings and specification required to estimate from, in the event of the lowest tender exceeding the amount prescribed, and the consequent abandonment of the plan?—and if so, how much? After some correspondence, the architects proposed, in that event, to charge thirty guineas for the working drawings, to which the general committee raised no objection. Ultimately, however, on being further pressed by the sub-committee, the architects agreed by letter that "if no tender were obtained to the approval of the committee," they would "not make any charge for their services."

Five builders were selected, and it was arranged that the quantities should be taken out by one surveyor; that the builder making the lowest tender, below 2,000*l.*, should execute the work, and pay for the quantities; but that if the lowest tender exceeded that sum, and the works were not done, the committee should pay for the quantities.

Four of the builders sent in tenders, namely, Messrs. Grimsdell, Cubitt, P'Anson, and Curtis;—the highest was 4,200*l.*, and the lowest, Messrs. Curtis, 3,794*l.* (including fence walls and cellars =700*l.*).

The cost of taking out the quantities,—mark this, good Mr. Committemen of all classes,—was *seventy-three pounds*: a fair and ordinary charge.

At a meeting on the 16th of November, when the foregoing particulars were made known, and the sub-committee wished to know how they were to act, much difference of opinion was expressed. One member thought the contract should have been put to public competition, because he had known a case where tenders being called for, the highest was 6,000*l.*, and the lowest 4,000*l.*, and he was able to state that the builder who executed it for the lower sum had paid himself well by the transaction. Another clenched this by referring to the tenders sent in for a certain Town-hall, whereof the lowest was exactly half the amount of the highest.

Some thought they ought to strive to get more money, and carry out the plan, as it was generally liked; some, that it should be reduced in size to meet the funds in hand; but another (Mr. Kelday), taking the right view of the case, in one aspect, pointed out that it would be most unfair to the other competitors to accept these plans with the information then before them. They might be the best submitted, but if the other competitors had allowed themselves the same latitude in regard of expense, they would doubtless have sent in designs of a higher character: they had sent in plain designs, not perhaps from deficiency of talent, but in order to keep within the specified outlay. He did not think it right, therefore, that the advantage should be given to those who said they could produce a builder to execute the building for a certain sum, and then drew back from that agreement. The truth of this was felt, and the matter was adjourned for consideration.

On the 26th November the committee met again, and a vote of censure on the architects being proposed, a long discussion ensued. One member remarked that this practice of saying a building could be executed for a sum much smaller than was really the case, was very commonly adopted by architects upon similar occasions. Some were anxious to keep the drawings, but employ other architects to carry them out. A few were for a fresh competition and another selection, but the expense of *taking out the quantities* again was an obstacle to that course.

Yes; twenty or thirty architects might have been allowed to make designs, to spend long hours putting on paper the result of years of expensive study, without compunction: a twenty pound note, or nothing, as the case might be, would have got rid of the *successful* candidate if not needed after all. But *to take out the quantities*, to estimate what the creation of the architect's intelligence, not to say art, would cost in fulfilling, could not be done without outlay of money, therefore the fresh competition was to be avoided. The same consideration, too, prevented application to the authors of the second and third selected designs.

A very praiseworthy anxiety was manifested that the building they were about to erect should be creditable to them: more than one speaker admitted that they were of course aware when they selected number one, that it could not be carried out for the money named, but then they were justified in depending on the architect's statement.

Mr. Kelday, however, stuck to his motion: they had started at the outset, he said, by propounding certain conditions to men of talent, members of a liberal profession, and it was not just to those (be they few or many), who had attended to these conditions, to select the work of one who had so far exceeded the limits of expense. Ultimately the vote of censure was passed, the fact that nothing was to be paid to the architects duly recognised, and a sub-committee appointed to obtain plans from one or more architects, with the significant remark that next time the architect himself should be made to pay the expense of *taking out the quantities*, in the event of the lowest tender exceeding the amount of his estimate.

All this is exceedingly instructive; and what it teaches is so plain as scarcely to need a comment.

Ought we to blame the committee for their rejection of the selected design? Certainly not. We should otherwise stultify all our denunciations of committees on other occasions, who, prescribing a certain sum, have selected designs which obviously could not be executed for it, and so acted most unjustly to the honester or better-informed competitors. Committees, by constantly determining in this way, have led many architects to consider that it is of no use stating honestly the sum they believe the due execution of their design would cost,—that their only chance of success in a competition lies in the practice of a deception. That competition committees have themselves brought about this melancholy state of things, is, however, no defence for those who so conduct themselves.

But there is another aspect under which architects' estimates must be viewed,—and that is, as we said at starting, the degree of correctness which should in justice be expected in them. An architect's estimate, for which, by the way, no one ever contemplates paying him, should, in justice, be regarded only as an approximation. To be very far from wrong in a *bonâ fide* estimate, shows a want of a certain kind of knowledge which an architect ought to possess, but to expect that he shall, without adequate remuneration, go through a tedious and lengthened process of calculation, or pay the large sum which he must pay if he employ another to do it for him, is manifestly wrong. In the case before us, it was seen that the process which was considered necessary to enable the builders to arrive at an exact estimate,* cost more than 70*l.*, and no one questioned the correctness of this charge. The sum which the successful architect was to receive, if not employed, was 20*l.*! Even if employed, the commission would have been but 100*l.*,—for design, speci-

* We mentioned the award at the time (p. 235, vol. v.) with the remark, that we had received various complaints against the decision, but avoided insertion of them as we had not seen the plans.

* The differences between builders found, in many cases, even after this calculation, are, our readers know, sufficiently strange. The following list of tenders for six villas, near Fleetpond, Hants, forwarded by a correspondent, a few days since, affords a pretty specimen of careful estimating:—

Boxall, Guildford	£2,357
Smith, Guildford	2,342
Fathers and Loe	1,980
Hall and Sons, London	1,835
White, Hartley-row	1,736
Charlton, Hartley-row	1,942

fication, working-drawings, and superintendence, so that it is quite clear, no detailed estimate was to be paid for.

Even in private practice entire disregard is exhibited of the value of an architect's services, and the profession is constantly maligned for not doing well what the members of it are not paid for doing at all. An employer, after having instructed his architect for the preparation of plans, and made the design on paper exactly what he requires, bids him say about what sum the building will cost. He has not the slightest idea of paying for an accurate calculation,—would refuse to do so if the charge were made; and the architect, whose time is his stock in trade—his all, cannot afford, therefore, to give more than an hour or two to the inquiry, and trust to his judgment for arriving at the approximate cost. In nine cases out of ten the opinion given is borne out much more fully than could be expected,—remembering, moreover, that a man may be a very good architect without having that special and particular knowledge of the value of materials, which a rigorously exact estimate requires. A general knowledge of this he is bound to have; but the particular knowledge, requiring, as it does, much time, can scarcely be looked for in one who makes his profession as a fine-art his especial study. Nevertheless, when, in the tenth instance, the architect's hasty estimate is exceeded in execution, an outcry is made, and the truth of the conviction, that no dependence is to be put in architects' estimates, seems placed beyond a doubt.

Here, then, would seem to be two opposing difficulties; but our reflective readers will be able to reconcile them, and will not be led to say that one part of our present paper answers the other. They will see that an architect's estimate under ordinary circumstances, should not be considered as more than an opinion—evidence, it is true, of his good judgment in this respect, or otherwise—but not to be viewed rigorously, as if he had been employed and paid to make all the necessary calculations. At the same time, it will be clear to them—or we have written in vain—that if a committee in offering a building to competition, prescribe to architects an exact sum for its cost, they are bound to select a design wherein this most fundamental regulation has been properly attended to.

ON THE ANCIENT BUDDHIST ARCHITECTURE OF INDIA*.

To obviate as far as possible the difficulty arising from the extreme complexity of the subject, I propose confining what I have to say this evening to the Buddhist architecture only, rejecting for the present all other styles. It is the most ancient and most easily circumscribed, besides being, I think, the one most generally interesting to Europeans; and if I can define to you correctly its position, in time and space, so as to give you a clear idea of when it arose, and in what part of India, I shall not despair communicating to you some interesting information on the subject.

Before, however, proceeding to do this, there are one or two points to which I would wish to call your attention. The first is to beg of you to discard from your minds all idea of the primeval antiquity of Indian monuments, though you have seen this asserted in every treatise that has hitherto been written on the subject. There is no fact in the whole range of the subject so clear to my mind as that the Buddhist monuments are the most ancient, and the founder of the religion died only 543 B.C.; but even this is too early, for the religion did not become the religion of that state till more than three centuries from the time, when Asoka, the greatest of Indian monarchs, was converted to it; and the earliest monuments of any sort that we have in India belong to his reign, or are subsequent to the year 250 B.C. This I look upon as an indisputable, and hitherto undisputed fact:—of course monuments of an earlier date may hereafter be discovered, but it is scarcely likely: at all events, I know that no one that I have seen or heard of, has any pretension to an earlier date. That the people were civilised, and had buildings before that time, is equally certain, but they must have been slight, and constructed of wood; and, indeed, all the earlier caves shew how little they had advanced beyond wooden construction at the period they were constructed, as I shall have occasion to shew in the sequel; and besides this, we have the collateral evidence, though only negative it must be confessed, of the silence of the Greeks, who surely would not have omitted all mention of them had any buildings of importance existed at the time they were so familiar with that country.

There is another generally received dogma I must beg of you to banish from your minds, that there exists any similarity between Egyptian and Indian architecture. I believe it to have arisen only from the error just pointed out regarding the supposed antiquity of the Indian monuments, and consequently having two styles very old and very mysterious, and of one of which, at least, writers knew very little, it was natural that they should be classed in the same category, and a resemblance assumed, till further knowledge pointed out the fallacy. Had architectural criticism, however, been conducted on more philosophical grounds, the error never could have existed, for men would then have known that when architectural similarities exist, we may predicate similarities of race as certainly as we are in the habit of doing from similarities of language; and that when two distinct races occupy the different countries, similarities of architecture are as inseparable as those of language. But of this more hereafter.

There is still one other point I must bring to your notice before proceeding to the architecture, which is this: that from the earliest times, India has been inhabited by two distinct and separate races; the one, as far, at least, as we know, aboriginal, inhabiting nearly the whole of the southern part of the peninsula, and forming the substratum of the population even in the northern parts: who they are we do not know, for no affinity for their language has been discovered among any other people in the world. So far as we yet know, they stand utterly alone, and though I think I can trace some slight resemblance, as I am not going to speak of their buildings, I shall not trouble you with them now.

The other, a Brahminical race, came into India as strangers and conquerors, I believe about 3000 B.C. They came across the Indus, and gradually extended their settlements all along the valley of the Ganges; and, as the superior and more civilized people, the influence of their arts, literature, and institutions is felt down to Cape Comorin, though their language *is*, or rather only *was*, spoken to the north of the Vindhya mountains. This I have endeavoured to express on this map.

Whatever difficulty we may have regarding the affinities of the other race, we have none regarding this one, as they are a branch of the same Indo-Germanic family to which we ourselves belong; and if you draw a straight line on the map of the world from the mouth of the Ganges to Iceland, it will pass directly through the centre of these settlements, leaving Persia, Greece, and Rome on the one hand, and Russia and Scandinavia on the other, all which belong to this great family of the human race.

The Buddhist religion, as we now know it, is essentially a religion of the Sanscrit or Indo-Germanic race, and seems at an early period to have extended through the greater part of these tribes, though, by a strange fatality, it is not professed by a single nation of that great family at the present day; and there does not exist in India proper, an individual, certainly not one establishment of Buddhists, but it is still the religion of China, Siam, Burmah, and Thibet, and of almost all the Tartar race. But even among them, though their language has no affinity with Sanscrit, the Buddhist scriptures are preserved in the old Pali of India, which is merely a dialect of the Sanscrit, and I myself have heard the priests of Buddha in China, repeat their prayers and hymns in this extinct tongue without their understanding one syllable they were saying.

It is more than probable that Buddhism, or something very like it, existed long before the age of Sakya Sinha, but at all events no distinct trace of it is found in India till his time. He was the son of the king of a petty principality, at the foot of the Himalayas, one of the last of a long race of kings who had held supreme power in that region, and we have, even now, the names of 120 of his forefathers who succeeded one another on the throne of Ayodya; his race, however, had fallen into decay, and been superseded by another, who had usurped the power, when Sakya Sinha—that was his proper name—left his father's court, became an ascetic, and after preaching and teaching for forty-five years, died at Rajagriha, 543 B.C. Perhaps it will fix the date better in your minds, if I state that he was cotemporary with Confucius in China, Cyrus in Persia, Solon in Greece, and the Tarquins in Rome; in short, of all those great men who ushered in that great epoch of the world's history which we know as that of the Greek and Roman civilization.

As I said before, his religion languished for more than three centuries from the time of his death, sometimes in favour with the people and princes, sometimes neglected, perhaps persecuted, till Asoka did for it what Constantine did for Christianity—he made it the religion of the state. This Asoka was the grandson of Chandragupta, who is identical with the Sandracottus of the Greek and Roman historians, and who usurped the throne of India, vacant apparently in consequence of the defeat of Porus by Alexander the Great, or at least of some internal convulsion occurring at that time.

His conversion, in the eleventh year after his accession and the seventh after his inauguration, is one of the most celebrated events in the history of this religion; and he himself signalized it by inscribing fourteen edicts, containing the principal doctrines of the faith, on a rock in Orissa; and a second copy, slightly varied, of them, on another rock in Guzerat, and a third copy has lately been found in Afghanistan: besides these he set up pillars or laths, in various parts of his dominions, at Delhi, Allahabad, in Tirhoot and other places, inscribed with short edicts, to the same effect. some five or six of which still exist. In the rock edicts, one of them mentions his having engaged his allies, Ptolemy, Antiochus, Alexander, and Megas, to tolerate, if not to favour his doctrines in their countries, a circumstance which not only fixes his date with certainty, but, coupled with the spread of the edicts, proves the extent of his power and alliances at that period.

When first promulgated, no religion could have been more free from idolatry or polytheism, or materiality of any sort, than this one; indeed, so much is this the case, that it has often been called atheistic, and by those who were well acquainted with its tenets, though this has been disputed by others.

It is true, images of Buddha and saints afterwards became very common, but only in modern times. In the more ancient buildings nothing of the sort exists, and there is no more certain proof of antiquity than their absence; and, on the contrary, the more frequent and prominent they become, the more modern the building is certain to prove; till at last the religion sank into a polytheistic idolatry, almost as corrupt as that of the Hindoos themselves, and perished in toto, after being the religion of India for nearly 1,000 years, or from B.C. 250, and A.D. 750: it existed some time longer, it is true, but in a languishing condition, and about the period of the Mahometan conquest disappeared altogether.

One of the earliest forms of Buddhist worship is that of relics, which gave rise to the other principal forms of architectural utterance. One of the most celebrated of these relics now is the left-eye tooth of the founder, which immediately after his death was conveyed to Cuttack, and kept there for some eight centuries; on the country being invaded, however, by some strangers, the daughter of

* Read at the Royal Institute of Architects, Monday, March 6th.

the king concealed this most precious treasure in her hair, and escaped with it to Ceylon, where it was received with all due honour, and enshrined in a magnificent casket. When we got possession of the island, we immediately took charge of the palladium, a guard was appointed to watch over it, and the key of the chamber where it was kept was never out of the possession of the chief commissioner of Kandy. As you will see by the last papers from the East, we have got tired of the charge, and the new governor, Lord Torrington, has handed over possession of it to the priests, to take care of for themselves.

These relics were always enshrined and kept in topes or dagobas, of one of which I have a drawing here. A tope is a tumulus or, to speak more correctly, it bears the same relation to a tumulus that a stone altar does to a stone coffin, or sarcophagus,—the one is meant for the burial of a body, the other is a simulated tomb meant to contain a relic, which may be a bone, or a whole skeleton, or a vessel, or bit of cloth—any thing, indeed, that has become particularly sacred.

A tope consists always of three parts—first, a circular base or *drum*, a *dome*, and lastly, a *tee*, or ornament on the top, supporting an umbrella of state, sometimes there are nine of them. These often vary in height, the oldest being the lowest, and the tendency being always to make them taller and taller as we descend in the series.

The principal relic is always deposited in a small chamber, exactly under the centre of the buildings, at the height of the springing of the dome. Sometimes a second and third deposit has been found, one above another, which led the celebrated German geographer Ritter to propose the theory that the topes were like the Chinese towers, built in three, six, or nine stories, a conjecture that shewed he was in the right path of inquiry, though I believe that he was mistaken, the true explanation being, that when a second similar relic was found, instead of building a new tope, it was placed in a chamber on the top of the old one, and a new casing added to the whole, in this manner, and so on, with a third or fourth if requisite. This was the conclusion M. Masson arrived at, from his extensive researches among the topes in Afghanistan,—and in Burmah such is even now the current belief of the priests. I have here, for instance, a drawing of the famous pagoda of Rangoon, said originally to have been a small building, but increased successively, to contain the staff of one Buddha, the water dipper of a second, the bathing garment of a third, and eight hairs from the head of the last.

When the great tope at Manikyala-Taxila, in the Punjab, was opened by General Ventura, the principal deposit was found surrounded by coins of a king, known to have lived about the Christian era: an upper one was surrounded by those of the Assacidæ. The principal relic was contained in a small gold cylinder, inclosed in a copper one, and consisted of some fragments apparently of amber, in a brown liquid, though it has never been correctly ascertained what they were.

In all the larger structured topes, the tee has been destroyed, but we have abundance of representations of them in the sculpture of the caves and their paintings, and also in the rock cut topes, to know what they were. In the oldest caves they consisted of a cubical basement, supporting one or three discs, or umbrellas of wood; one of these still exists at Carli, though probably from fifteen to eighteen centuries old. At Ajunta we have the same form repeated in stone, and a model of one was found in the chamber of a tope in Afghanistan, now in the museum of the India-house, with nine discs. Afterwards the tee became all-important, the domical basement having gradually gone out of use, and the nine-storied towers, such as the famous porcelain tower at Nankin, are merely exaggerated tees, without the topes they were once meant to adorn. I have not drawings here sufficient to point out all the steps of this transformation, but I have seen every step of it, and have here a drawing published some years ago by the Asiatic Society, in which you will see a tope surrounded by a nine-storied tee of almost the exact form of those in China.

The circular inclosure that surrounds, or at least did always surround, these topes, is another peculiarity, I must not omit to mention. In the instance I have selected for illustration, that at Sanchee: it consists of upright pillars, about 11 feet high, joined at the top by a transverse piece, and between each pillar there are inserted three bars of stone,—a peculiarity, as far as I know, that does not exist in any other structural building *now standing*, but it must have been very common, for, as a moulding, this singular form exists in every ancient cave or building I am acquainted with, and is by far the most common moulding found.

Owing to the facility with which it can be removed, this inclosure is not found in any of the topes in Afghanistan; but in Ceylon, where topes are still respected, almost all of them have it. The pillars, however, are not generally joined at top, but stand in one, two, or three concentric rows, round the monument. In some instances almost more important than the monument itself, as in this one of the Thupuramaya.

Sometimes these circles became the principal or only object at an Amravati, on the Kistna, which is only a large circle, of large sculptured stones, some of which are in the India-house,—in the centre of which there is now a tank, but whether that is the original design or not I cannot say.

Another peculiarity of the Buddhist religion is their veneration for sacred places, to mark which they frequently erected towers, similar in form to topes, but in the ruined state in which they are now found it is difficult to detect the difference till after the trouble is taken to open them, when, no relic existing in the centre, the explorer, after all this vain trouble, discovers that he has been working on a stupha, which is the proper name of these monumental towers, while dagoba is the one that, were I not afraid of multiplying hard names, should be applied to those that contain relics.

The gateways are another peculiarity of this monument deserving notice, as they are the only ones now standing in India, and from their top-heavy form it is wonderful they have stood so long. From their form, it is evident they must be copies of wooden erections; indeed among the frescoes of Aunta there is represented a wooden one, very similar in form to this. The wooden one, however, may be merely a cheaper form of accomplishing the object wanted, in which case this must be considered as an elaborate Trilithon.

They are all covered with sculpture of the most elaborate kind, representing emblems and the objects of Buddhist worship, but, owing to their antiquity, no images of Buddha himself.

One of the four has fallen, and as it contains historical bassi-relievi, representing, among other things, a siege of a town, in which the dress of the warriors and their arms, as well as the forms of the houses, and other interesting peculiarities, exist, I wish much it could be conveyed to England, as it would convey a very different idea of Indian art to the public than anything that has yet been brought to this country.

Be this as it may, these gateways are the originals of the Paitoos of the Chinese, or, as they are usually called by Europeans, triumphal archways, which generally stand in the market-places of towns in China.

Another class of Buddhist monuments to which I must now call your attention are the chaityas, or churches of that religion. In India we know them only as caves, and in consequence I will always call them chaitya caves. The finest and most perfect one in India is that at Carli, of which I have here a plan and section; it is 102 ft. 3 in. in length internally, and 45 ft. 7 in. in width. Like all these caves, it bears a striking resemblance in disposition to the choir of old Norman churches—consisting always of a centre and two side aisles, terminating in a semicircle, in the centre of which is placed the altar, which, in this instance, is always a tope or dagoba: whether these rock-cut examples contained relics or not I cannot say,—certainly not in their interior, for if the rock were once opened, the fracture could not be concealed. But they all shew traces of being covered with woodwork and ornaments of some sort, and the relic may have been placed in a chasse of some sort in front of the dagoba. In the most modern ones, a figure of Buddha stands in front of it, but the existence of this is a certain sign that we are arrived at an age when idolatry had superseded the more purely Buddhist doctrine of relic worship.

To the chaitya caves I shall return presently when speaking of their construction, and shall therefore now pass on to the only remaining class of monuments with which I will now trouble you, and these are viharas, or monasteries, which always accompany these chaitya caves. Generally, there are three or four, or more monasteries to each church, and often the monasteries exist alone, without any chaitya cave in the series, though the converse is, I believe, never the case.

The earliest of these viharas are mere cells, cut in the rock, where one or two ascetics might dwell—one of the most singular being the tiger cave at Cuttack, which is a rock cut into the form of a tiger's head, the expanded jaws forming the verandah, and a doorway where the throat should be, leading to the cell.

In the next stage they became a long cell, with a long verandah; then gradually the cell became a hall, supported by four, twelve, sixteen, or twenty-four pillars, with the cells arranged round them. In this case, however, opposite the entrance is always placed a sanctum, in which is a figure of Buddha, as an object of worship: and in the more modern times side-chapels are also provided, in which are statues of inferior saints. Generally speaking, the walls and roofs of all these monasteries are decorated with fresco paintings, representing either historical subjects, as battle pieces or great ceremonials, or scenes from the life of Buddha, or of the peculiar saints to whom the Vihara may be more particularly dedicated.

J. FERGUSSON.

THE ITALIAN OPERA HOUSE, COVENT GARDEN.

A CORRESPONDENT remarks, "last week you spoke generally of the object and effect of the alterations at the Italian Opera House. It will not be uninteresting to your readers if this week you record what work those alterations involved, and the short time in which they were made. Such notices prepare architects and builders for similar works, and let them know how much can be done in a little time when absolutely necessary." We willingly follow out the suggestion.

The parapet, roof, and ceiling of the refreshment room being in extent 62 feet by 22 feet (out and out), were removed, and a new ceiling and an entirely new building, raised on the old walls, to a height of 32 feet to the ridge. The second amphitheatre and gallery, with two boxes on each side, were taken away, and a new amphitheatre reconstructed at a much greater angle, capable of holding upwards of 600 people, an area about 57 feet by 47 feet. The south wall (supporting the roof of the theatre and carpenter's workshop), was pulled down to the extent of 54 feet in length by 30 feet in height, and 3 feet 6 inches thick. The roof and floor were shored up, and a timber truss, 53 feet span, introduced, into which the timbers of the roof and floor were reframed. The order was given on the 8th February. The works commenced on the 9th; were completed and certified by the official referees on the 7th March, and the last instalment due on the contract paid on the 8th!

When it is remembered that the whole was executed at a height of 60 feet from the paving line of street, without in any way interfering with the body of the theatre, the only approaches being up a narrow passage and the old gallery stairs; and we take into consideration the wet weather at the end of February and commencement of March, which retarded the progress of the works, it will be seen that some credit is due to the parties concerned, for the short time occupied.

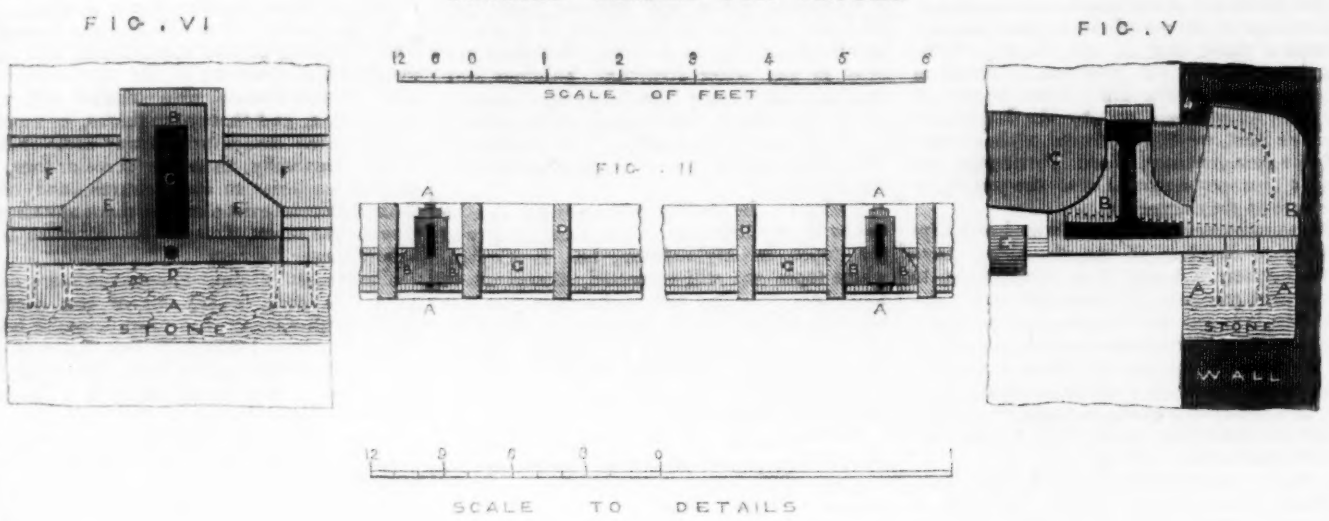
Mr. R. J. Hodgson was the architect employed, and Mr. Holland the builder.

AN ERUDITE BRICKLAYER.—A bricklayer, who was employed by the parochial authorities of a village in the Western district to erect, or as it is technically termed, hang two coppers to supply the poor with soup during the severe season, sent in his bill in this form:—

"The genteelmen of —— dr. to John Jackson,

To hanging 2 *coopers* to make soup for the pore."

TRUSSED GIRDER FOR FLOORS.



CONSTRUCTION OF FLOORS.

SIR,—Since the time of Nicholson and Tredgold, no one has attempted practically to elucidate the principles of construction generally as applied to building purposes, though, since they wrote, extensive improvements have taken place. Adverting to carpentry, the works of the before-named authors treated in their time so ably, on the advantages of scientific construction as applied to practical carpentry, that for some time they left little or no room for others, but as science has made rapid strides towards perfection, it cannot for a moment be supposed that so important a branch of the mechanical art as we are alluding to should remain in *statu quo*. Without any intention of endeavouring to supply the deficiency, the following may not be without value to a certain class of your readers, although perhaps others may view it impatiently.

The carpenter who understands his trade must have devoted considerable time and application to acquire that information, and it frequently occurs that to him is intrusted the management of carrying out the architect's designs. The mason, the bricklayer, and other artizans must study the most practical, efficient, and economical means of working and applying their various materials, but the business of the carpenter being so connected with practical geometry, to him usually the others apply for the making of the centre-moulds, fixing the bond timber, and other matters connected with the construction of a building.

Geometry being the science which considers the properties of lines and angles, as formed according to some given law, also the construction of figures corresponding with given data, it is requisite that the mechanic should make himself thoroughly acquainted with it.

Without the aid of this branch of knowledge, he will be unfit for any undertaking whatever, and so long as he is ignorant of the methods of geometrical construction, he must remain under the control and direction of a superior in his own class. The uses of geometry are not confined to carpentry. Indeed, there is no mechanical profession that does not derive considerable advantage from it. One workman is superior to another in proportion to his knowledge of it.

By practical geometry and architectural dynamics, our predecessors in the art of building discovered the way in which their materials were affected by gravity, and were enabled to economise them and reduce their quantity; yet many of their edifices, after 500 years, are more sound than some modern buildings which have not subsisted fifty years, and which contain five times their quantity of material.

It frequently occurs that the carpenter evinces great sagacity in the use of temporary shores and strutting, while buildings are being underpinned and repaired or altered, and it is strange that the same person who exhibits this sagacity, and who finds out pretty correctly which way the force of gravity will move during the temporary jeopardy of old buildings, should so entirely neglect the means requisite for preventing those extensive derangements which leave many of our new buildings, intended to be permanent, mere heaps of ruin, warped, cracked, and distorted.

A late esteemed author states that a child, by delicacy of hand, poise and counterpoise, without cement, tenon, joints, or glue, can raise up a fabric of cards, but the grown builder, staggered and lost amid his mortar, cement, tenons, spikes, holdfasts, nails, screws, glue, cramps, and braces, forgets that providence by which a small quantity of material may be made to hold up firmly without any of these additional means of union.

The ancients piled up the stones composing many of the best works of their day without cement or such auxiliaries, and several of them still exist without flaw.

Cements or pegs made use of in a fabric, the materials of which would, without them, by gravity, assume some distorted form, are less employed for strength than to counteract the ignorance of the fabricator. These things should be used to make a small quantity of materials rightly placed perform the same duty as a larger quantity of them would without such aids.

In the basement story of a building, if the walls be strong and the foundations good,

there cannot be too small a quantity of timber used; indeed, none should run round as continuous bond, or in any other situation where it is liable to rot; it should only be inserted when absolutely requisite as wood-bricks where necessary for fixing the joiner's work to, paying particular attention to avoid it in the party walls. A 9-inch party wall of stock brickwork, bonded only with iron hooping and of good structure, will resist fire as well as most 18-inch party walls built as at present. Wood lentils should be avoided as much as possible; if used, they should not be much longer than the width of the openings, and each with an arch sprung above it, reaching from end to end of the lintel, so that if it be destroyed the brick arch above it will remain sound to support the weight above.

Little of the constructive department of carpentry is required in our modern erections in the basement story (and the less the better). Probably the carpenter's first essay would be to ascertain if the walls are perfectly level for the reception of the plates, &c. The next consideration will be the floors, which are either single or double, according to the magnitude of the building: those called single consisting, as most of your readers know, of a single tier of joists, laid from wall to wall, either longitudinally or transversely. Double floors are formed of girders which receive the flooring joists above, and ceiling joists below, in all their various forms. In forming single floors, the most usual way is to firmly fix the joists from front to back of the building, which in small houses having short bearings require no trussing, or, if any, that which is technically termed herring-bone trussing is generally sufficient; but in houses of larger dimensions, or where the bearing becomes greater, or the thickness of the flooring joists a consideration, a different sort of truss should be introduced, of which there are several; and the object of the present communication is to describe, by means of the accompanying diagrams, one which has been found very sufficient for the purpose, composed of wrought and cast iron as a support to the wood.

Fig. 1.—Assuming I.I. to be the bearing or span of the joists between the walls, the bars, DD, are inserted of malleable iron 3½ inches by ⅞ or ¾, and which are fitted into a cast-metal king-head, with connecting shoes for support of cast-metal cross bearers, and a projection, to be tapped for a union joint to be connected with the tension rod. AA, brick walls; CC, cast-metal shoes; DD, trusses which are strutted from the joists on each side to keep them from springing, and secure them in their proper position; E, cast-metal king-heads, with shoes for cross bearers, orifices for bolts, &c.; FF, tension rod, with union joints; HH, joists.

Fig. 2.—Transverse section of floor; AA, cast-metal king-heads, with bolts, &c.: BB, shoes for cross bearers; CC, cross bearers; DD, floor joists.

Figs. 3, 4, 5, *and* 6 are details, one-eighth real size.

Fig. 3.—Transverse section of metal head, joist, &c.; A, cavity for receiving truss; B, bolt; C, tension rod; DD, shoes for receiving cross bearers; EE, cross bearers; FF, strutts; GG, floor joists.

Fig. 4.—Is the elevation of the cast-iron head, it will be perceived the under flanges of these bearers are a little wider than the shoes, to allow the floor-joist a better or larger bearing upon them; BB, trusses; C, cast-metal head; D, section of shoes for receiving cross bearers; E, king-bolt; *dd*, flanges of shoes; FF, tension rod; GG, joists.

Fig. 5.—Elevation of the shoe fixed to a stone plate 2 feet 6 inches or 3 feet long; the ends of this shoe are cast in form of dovetails, and are run into the stone with lead, a small bar of iron should then be fixed in a similar manner from stone to stone, either on the face of the work or on the top of the bed of it; to connect these stones as bond all round the building—A, stone plate; B, iron shoes; C, iron truss; D, tension rod; E, union joint.

Fig. 6.—Section of the same, A, wall-plate; B, metal shoe; C, cavity for iron truss; D, tension rod; E, shoes for cross bearers; F, cross binders next wall. From the construction of this floor it becomes nearly fire-proof, as the principal supports, bonds, &c., are of stone and iron, consequently if ignition should take place, it is confined to the floor joists and boards only. B.

SOME NOTES ON CHURCHES AND CHAPELS.

THE alterations in *Westminster Abbey Church*, in the practised hand of Mr. Edmund Blore, are nearly completed, and, however much we may differ from the authorities as to the mode in which additional room for the public should have been obtained, we must bear testimony to the goodness of the work. The new stalls which surround the choir, are exceedingly well executed by Ruddle, from Peterborough. The canopies and finials present considerable variety. The stained glass in the south transept is finished, but the windows are at present covered up, and will remain so until the church is again opened for service. The ancient monuments in the abbey call loudly for conservation, and the modern ones for removal. The chapter-house continues in a disgraceful, not to say dangerous condition. It is to be hoped that the remarks which have appeared in THE BUILDER, on the decaying state of the external stonework of Henry the Seventh's Chapel, and the possibility of applying a preservative solution (quoted far and wide by contemporaries), will lead to some such step. The necessity is urgent.

The new church of *St. Mathias, Bethnal Green*, designed by Messrs. Wyatt and Brandon, in the Byzantine style, was consecrated about a fortnight since. It is built exteriorly of brick, with stone dressings, and consists of nave and aisles, tower and chancel. The nave has at the west end a large wheel window, and a projecting porch. The tower is on the south side, projecting from the aisles: it is square in plan at the bottom, but takes an octagonal form above, and is surmounted by a slated spire. The pillars, separating the nave from the aisles, carry moulded arches, which support the clerestory. The capitals of the pillars are varied in design. The roof is of timber, of open work, and stained dark oak. The chief feature in the church is the chancel and semicircular apsis at the eastern end, the floor of which is, as usual, raised above the level of the church. The ceiling of the apsis is domical in form, has an opening for light at the top, and in a narrow frieze running along at the spring of the ceiling, is this inscription, "A new commandment I give unto thee." The floor of the apsis is of red and black tiles, excepting in the centre, immediately in front of the communion-table, where the tiles are more ornamental. The reading-desk is of wood, and is open. The pulpit, placed on the north side of the church, is of stone, and is novel and effective. There is a large gallery at the west end, and at the north and south sides are narrow galleries, supported on iron cantilevers. The church, in the interior, is 117 feet long, 50 feet wide, and 40 feet high, to the pitch of gable. The cost is said to have been about 4,500*l.* Mr. Holland was the contractor.

On Shrove Tuesday a small Roman Catholic church, called the *Church of St. John the Baptist, at Hackney*, was opened for Divine worship. It consists of a nave, north aisle, chancel, and sacristy, with a bell-cot and spire of Caen stone, 90 feet in height, at the west end, and has withinside more decoration than is usually found in Protestant churches. The altar is richly carved in Caen stone; and there is a sepulchre, piscina, and sedile, in the chancel. The rood-screen is of carved oak, with the rood, and figures of the Virgin Mary and St. John. It has a stained-glass window, by Messrs. Ward and Nixon. The roof of the nave is open, and the ceiling of the chancel is emblazoned in colours and gold; the panels are powdered with stars, and contain monograms of the Holy Name, the Virgin, the Four Evangelists, &c. The church is built of Kentish Rag and Hassock, and in style is of the Decorated period. The total cost, including altar, stained-glass, rood-screen, &c., and all fittings, was about 2,000*l.* The architect is Mr. W. W. Wardell, of Bishopsgate-street; and the builders were the late firm of Fisher and Son, of Stratford, Essex.

South Hackney New Church, under Mr. Hakewill, is making considerable progress, and is to be ready for consecration in June. It is a handsome and extensive structure, in the early English style, with transept, large chancel, and tower with broach spire at west end. The intersection of the cross and the chancel are vaulted; the rest of the church has open timber roofs. Polychromy, in a moderate degree, will be resorted to.

We have just seen a lithograph of a *Congregational Chapel* about to be erected in the Queen's-road, *Reading*, from the design of Mr. Poulton, which shews that the Congregationalists of England are also becoming anxious to give an ecclesiastical character to their sacred edifices. The style is Early English; with a turret and pinnacle at the four angles, a triplet window and slightly projecting doorway at the west end, and a high pitched roof. Rag-stone walls and Bath-stone dressings are to be used. Schools of similar character are to be added at the east end; and the cost of the whole is estimated at between 3,000*l.* and 4,000*l.*

The restoration of St. Lawrence's Church, in the same town, is being proceeded with. Several frescoes have been discovered on the east wall of the chancel, of a very interesting description; one of them, representing the "Transfiguration," is said to be beautifully executed. An early English couplet window has been brought to light in St. John's Chapel.

The appointment by the Church Building Society of supervising architects, noticed in a late number, is not relished. We have received several letters on the subject, and give the following as representing all. It is signed "An Architect," and says:—"I cannot help troubling you with a few remarks on a paragraph which appeared in your last number but one, stating that the Church Building Society had appointed several architects to advise on restorations, and to superintend the works for which grants were made by them, independently of the architect appointed in the usual way. Now, it appears to me, that such interference is not only an insult to the profession generally, but also the means of wasting the society's funds. Architects, as a body, will not submit to such an infliction; if they do, they will find themselves (however able) the mere agents of a clique, who are not a whit more capable of judging of geometrical proportion and "lateral thrust" than they themselves are. Again, what a field it opens for petty interference and annoyance,—to say nothing of its tendency to cram these co-operators down the throats of the public. We are well aware that no two men agree perfectly on all points in matters of taste, and therefore architects in this case will be considerably fettered in their judgment by differing in opinion with the paid advisers of the society. If this scheme be carried out, all the church restorations undertaken by the Church Building Society must be guided by the opinions and tastes of some half-dozen architects; this must not be, and the sooner the society abandons the notion the better."

"THE RIGHTS OF LABOUR,"

OR THE WAR-CRY OF THE FRENCH REVOLUTION.

THE Bourbons and the bourgeoisie are at a discount in the capital of France,—the blouses at a premium. The safety-valve of talk tied down,—instantaneous was the explosion; and disintegrated fragments of the very boiler of the great machine of state—the getter-up of its steam—the source of its power—the people—or the idle "populace," rather than the busy people—the red-hot fuel, rather than the mere scalding steam,—in short, the very dust itself kicked up—was forthwith found to fill the palace of the deserted Tuileries, and strew the benches of the abolished House of Peers. And so, too, the still more rash than skilful engineer has found his "firm seat" on the engine—boasted of even on the eve of this astounding crisis—useful only in his headlong flight to a quieter realm.

Paris—France—is writhing in the pangs of labour—most emphatically speaking, most significantly—LABOUR, even the labour of a new, uncertain, and mysterious birth, of unrealized, if not even unimagined shape,—a caricature, it *may* be, gross and terrible, of the "rights of labour," as was the bloody fruit of the first revolution, of the no less vaunted "rights of man."

The unfettering of industry from its anomalous trammels is a great and important problem—but not for solution in the midst of the hurry and the tempest of political revolution. It involves in itself a social revolutionary movement, to be cherished and matured by peace, deliberation, unity, and time, alone; and by some far more staid and sober-minded men than the populace—now ruling France.

There 'communism' is in the ascendant, not among the merely speculative alone,—not merely pervading the various classes of operatives,—but active, administrative, legislative, in the very government of the Republic. Louis Blanc, the president of the incipient Industrial Administration of which Albert, the quasi-'workman,' is the 'vice,' is well-known as a 'communist,' and earnestly keeps preaching sheer utopianism to the working classes, and promulgating its principles and practice in the formal decrees of the Government,—undertaking to "put an end to the long and iniquitous sufferings of workmen,"—"by whom and for whom" the revolution has been carried; and inviting and exhorting them to come and form a portion of the Committee of Workmen at the Palace of the Luxembourg; thus stirring up extravagant hopes to the highest pitch of possibility, and all this, too, while it even appears that the desires or demands of the workmen themselves at first were limited to such more or less immediately practical and attainable objects as a ten hours' work bill, and a restriction of wages to a certain minimum. The Government, however, not contented to keep their promises within the bounds of their tangible powers or prospects as a mere provisional, temporary administration, have been launching out into Elysian fields, with the visionary light of which the poor workmen have their eyeballs dazzled; and no wonder, therefore, that they have been displaying a decided *penchant* for associating in the Champs Elysées: but a sham Elysée all will prove to them we fear. One class and corps of operatives and others of the industrious classes, after another, have been rushing to the seat of Government, all demanding more and more preposterous legislative intermeddling with their several trades or businesses, or for direct pecuniary aid, or permanency of employment and increase of wages. Thus the paviours (an important class of operatives, seeing that "the citizens of Paris," as *Punch* observes, "take up their freedom with paving stones,") have modestly demanded double wages, for which the other trades, if they have any sense or penetration, ought to feel extremely indebted to the paviours, seeing that the ability, or the animus, of the Government was thereby brought at once to the test, which, alas, they could not stand. In place of yielding to the very moderate demand of the paviours, the provisionals "employed journeymen masons to repave the streets." The omnibus drivers and conductors fared much better than the paviours, as their demands of higher wages and lower fines were at once decreed. The river porters followed the example of the omnibus administration. The waiters in caffés and restaurants immediately struck, and the rulers were visited by the hairdressers, the calico printers, the drapers' clerks, the steelworkers, poulterers, sailors, the very fishwomen, *et multis aliis*. The shopkeepers, of whom there are 40,000, demand a reduction in rents, and why should not the building trades and the landlords demand a rise in that same essential element of their prosperity?

The government have really, however, displayed an earnest design to benefit their constituents. They have shortened the hours of labour, they are founding immense establishments to provide employment for "the people," and they mean to undertake vast public works, and to throw open various *spectacles* for their amusement. The national workshops already afford employment, or wages at least, to more than 10,000 operatives, but how long all this can last it is hard to say. Meantime the interests of *employers* are scarcely even thought or dreamt of, although merchants and small traders have had their decrees issued from the wholesale manufactory of the edicts, and other manufacturers and merchants have been knocking at the doors of the Hotel de Ville, or mean to do so.

An ominous demand for the abolition of "middlemen," will not be long, we fear, confined to the limited class of contractors to whom it is pretended yet alone to apply. The communists or socialists, it ought to be generally known, regard ALL as obnoxious "middlemen," who stand, as masters, traders, merchants, or otherwise, between the various classes of workmen, or "producers of wealth." Such middlemen must all, they say, become the mere paid servants of the wealth producers, not their paying masters, nor the parasitical consumers of, or profiters by the wealth, or work, or produce, of the working classes. If these communist or socialist principles, in short, continue to prevail, or even to struggle, and be recognized in the movement at Paris, the republic will be torn to shreds between the commercial and the operative classes, between the capital and the labour, between the Boulevards, as it were, and the Faubourg of the city.

We the less reluctantly expatiate on the prospective, or at least the possible, evils to be dreaded from this altogether unparalleled revolution, considering that the alarum is already ringing from almost every quarter, even in our own ears. In the horror of anarchy, however, and in the love of social order, which the experience of the past has generated, we trust for a peaceful termination to so ominous a commencement, and we do earnestly hope, that that termination *will* bring along with it the permanent and real improvement of the working classes, and the establishment of their true interests *in accordance with the best interests of their employers*, and of the mercantile and trading community at large, as well as with a sacred regard for the rights of capital and property.

ART FOR THE ELEVATION OF MANUFACTURES.

AT a recent meeting of the Decorative Art Society, the respective position of British and Foreign manufactures, in relation to their artistic merits, formed the subject for observations.

Mr. Dwyer remarked that the distinguishing difference between them, would be found to arise from the greatly diffused appreciation of superior designs among foreign manufacturers, together with the well-sustained mode of teaching drawing to all in every town of importance on the continent; while, in England, these things are, as yet, but too slightly cared for by the million. He referred to a recent visit to an extensive iron-foundry in Leicester, where, in reply to such questions as, "How do you obtain designs—do you employ a modeller?" it was said, "No; when we want anything new, we either set up a different arrangement and combination of parts from our own numerous moulds, or we get newer specimens from a *papier-mâché* manufacturer." Thus, there was not one person engaged in this factory, where design is very important, nor who felt this element of success worth caring for. It was satisfactory, however, to see some instances springing up around us where education of a character suitable to the employment is provided for the youth by the employer, on the most attractive terms. Messrs. Cubitt's establishment was mentioned as one, where a drawing-school and an architectural library are provided, as well as the teaching of arithmetic, and other matters, free of charge to those, young and old, employed by them.

It was said that the paper-stainers, who employ many boys, would find an advantageous result in providing the means for teaching them drawing and the principles of colouring. It was also said (by others) that the number of designers employed by the English manufacturers has greatly increased within the last few years, and that, although we have a profusion of mediocrity in talent shewn in the transfer and copying of patterns, from one material or fabric to be applied to another, a great and general improvement is taking place. Mr. Donatty urged that drawing should be taught in our national schools. He wished that the walls of the school-rooms could be decorated with a few good prints having a useful tendency.

It was remarked that the capitalist or master manufacturer too often knew nothing about artistic merits, and rely on their own intuitive taste in the matter of design, considering, in their speculations, that if some persons don't like them others will. Mr. Cowtan then stated that, with reference to paper-hangings, the system of manufacture in this country is different from that of the French, who often employ a chemist, and always an artist, to mix and distribute the colours, which are applied chiefly by women and youths under such superintendence; whilst in England the colours are prepared and laid on by the uneducated but dexterous workman. At the present time the best kind of "flock and gold" English papers are equal in every respect to the same kind produced in France; but in the manufacture of flowered and many-coloured patterns we do not obtain the perfect gradation of tints which is peculiar to the French manufactures. He was also of opinion that, since the admission of French papers under a reduced duty, the English manufacturers have had more regard to a reduction of the cost than to the production of better designs; and he thought that teaching boys, as alluded to, is exceedingly necessary, especially as the application and mixing of colours are in this country left in the hands of such persons when they have acquired a mechanical proficiency in printing.

THE NEW THRONE IN CANTERBURY CATHEDRAL.

ON Thursday next, the 24th inst., the inhabitants of Canterbury will have an opportunity of witnessing a ceremony which has not taken place in their cathedral for nearly 300 years: we refer to the installation of the new archbishop, which is appointed to take place on that day. A new throne having been lately erected in the cathedral, with some pretensions to notice, we could not find a more fitting time to give a view of it to our readers.

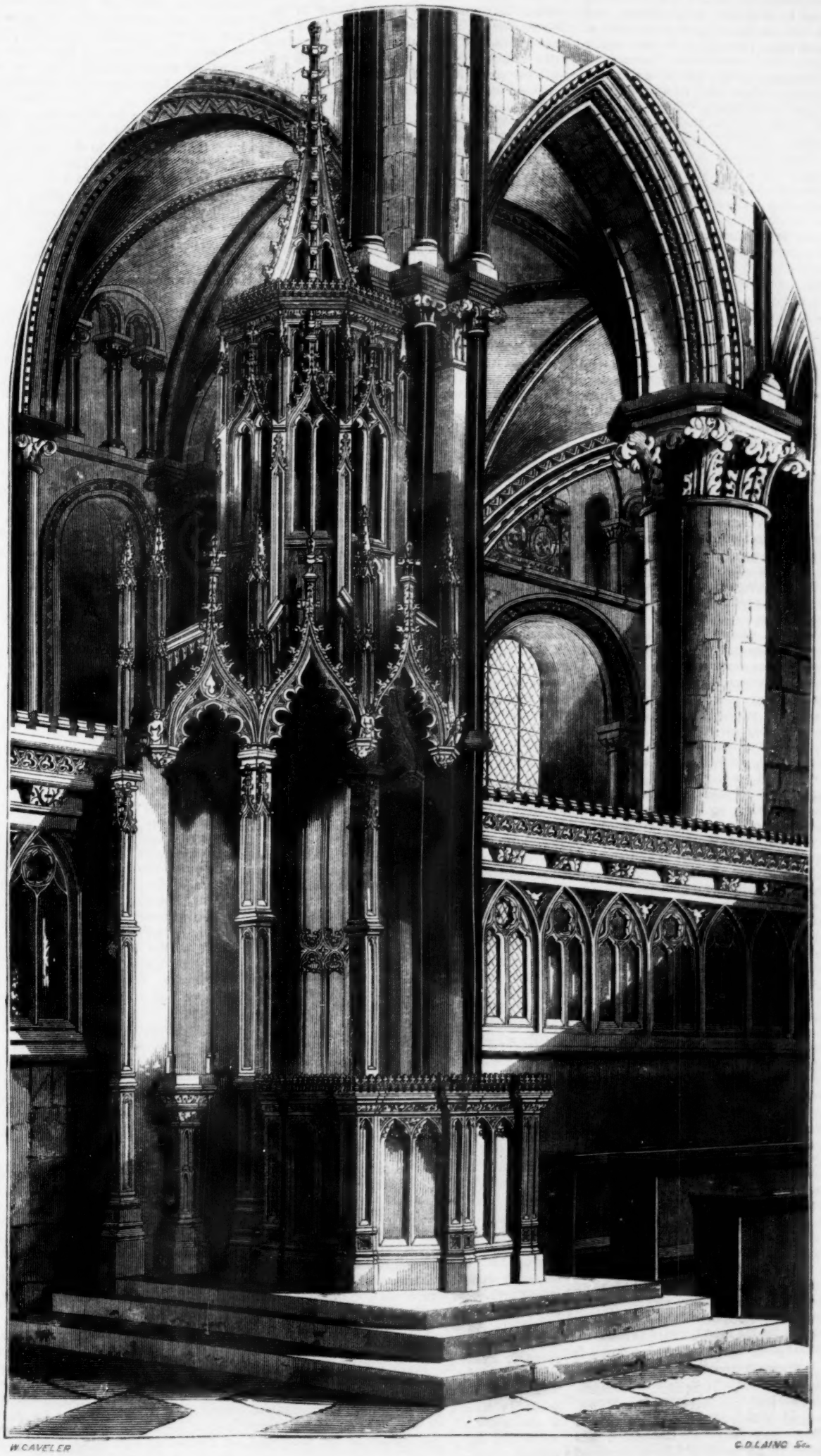
We have frequently had occasion to mention the improvements that have from time to time taken place in this cathedral. Twenty years ago it required very extensive repairs to put it in order,—like many of our cathedrals, it had been allowed to go on neglected until the matter became too serious to admit of any further delay. The dean and chapter of that time at once came forward to remedy as far as was in their power the neglect of their predecessors—and a serious work it proved: the whole of the nave, choir, and transepts, requiring a large outlay to put them into anything approaching a proper state. By great exertion this was done under the direction of the present surveyor, Mr. Austen. One of the western towers was also completely rebuilt, and the buildings which entirely inclosed the west end of the cathedral cleared away so as to afford a good view of that portion of the building; many other repairs not generally noticed, but which were requisite to the well-being of the edifice, have from time to time been executed: the pinnacles of the centre tower and other small parts have also lately been repaired.

After doing so much of a substantial character, the dean and chapter turned their attention to what may perhaps be termed the furniture of the cathedral, and the most important object of that nature was the archbishop's throne. The throne lately removed was a tolerable specimen of oak carving, good in itself, but quite at variance with the surrounding architecture. The throne newly erected stands on the south side of the choir, at the angle formed by the upper transept. The design was by Mr. Austen and his sons, and the carving was executed partly by English workmen and partly by men from Belgium and Cologne. As will be seen by the view, the throne is highly enriched, and it may be noticed that it bears a general resemblance to many of the shrines in Italy, particularly to one at Verona. The total height is nearly 40 ft., the width at the base about 8 ft., and the cost of its erection about 1,200*l*. Opposite to the throne, a pulpit of stone has been placed; this is not a very favourable specimen of art, but still is superior to the oak box it superseded.

It is said to be in contemplation to remove the oak stalls by Gibbon, at the west end of the choir, now occupied by the dean and canons, and to replace them with some of stone, more in harmony with the general character of the building.

THE ARCHBISHOP'S THRONE,—CANTERBURY CATHEDRAL.

MR. AUSTEN, ARCHITECT.



W. CAVELER C.D.LAING Sc.

THE EDUCATION OF THE HAND AND EYE.

THIS was the subject of an essay read by Mr. G. Wallis, at a *conversazione* lately held at the Royal Institution, Manchester, when he very properly urged the desirability of every person knowing how to delineate simple forms, and referred to the inefficiency of the mode of teaching generally pursued. It was really astonishing, he said, how little of true principles were obtained in the general practice of teaching drawing; but this, though at first sight it might be attributed to the drawing-master, was, in reality, the fault of the pupil and his parents. The pupil is determined that, from the outset, he will draw nothing but houses, men, horses, &c., and the parent is equally determined that the child shall commence at once to fill the family portfolio with drawings in the *album style*, which, if the pupil cannot execute himself, of course it is the duty of the master to execute for him, so that it is all the same thing. By this the master retains the pupil, the parent obtains certain drawings, or supposed specimens of the child's genius, but the latter, though he may make drawings, rarely learns to draw. Now all this arises from a misapprehension in both parent and pupil as to the real purposes of the art of drawing. It is no fault of the drawing-master, unless they choose to blame him for the misfortune of being compelled to cater to this misapprehension; for if he dared to attempt to teach upon a true and proper principle his classes would soon be empty. The truth was that all intelligent drawing-masters *knew* better, but feared *to do* better. No parent expected that when his son began to learn Latin or Greek he would come home at the end of the first quarter, and read even a dozen lines of Virgil correctly, or translate the argument of the Iliad, yet it was something very like this to expect the same boy to come home with a portfolio of pretty pictures at the end of the same period of time.

Mr. Wallis then directed the attention of his audience to what he proposed to call the eight primitive motions of the hand in drawing, each of which was totally distinct from the other, and under the various heads of which all lines might be classified,—viz., four right lines, the perpendicular, the horizontal, the diagonal left, and the diagonal right; four curves, comprised in the circle, the upper convex, the lower convex, the upper concave, and the lower concave. These were his alphabet of form; and he was satisfied that no person could draw with accuracy, unless he could delineate them, and these were the elementary lines which every child should be carefully taught at the outset. But in saying this, he did not desire to impress upon them the notion that the very young child was to be constantly kept at these lines, or strictly carried through a geometric course, though he believed from experience that in older pupils such a course was desirable; but what he desired to insist upon, was the fact, that in these eight lines we had the key to all form. The question then arose, what should be the next step, supposing a proper degree of exercise had been given to the hand in drawing these primitive lines? He had no hesitation in saying that it ought to be natural objects, but reduced to a plane in the first instance, inasmuch as solid models in which perspective projections had to be calculated upon, only served to perplex the pupil, and drive him from the study in despair or disgust. In order to explain his meaning, Mr. W. produced some dried leaves mounted on paper, and crossed by the two primitive lines, the horizontal and perpendicular, to assist the pupil in judging of the proportion of the various parts of the leaf, and also of the nature of the curves forming the outline. Those kind of examples, he maintained, were within the reach of every man, and they were better examples than the hand of any man, whatever might be his talent, could produce of their particular kind.

ASSESSMENT OF GRAVESEND.—Tenders for the survey and re-assessment of Milton and Gravesend having been sent in, that of Messrs. Burr and Son, of Rochester, has been accepted. The work will be commenced immediately.

A NEW PEN.

DR. SPURGIN, one of the directors of the Polytechnic Institution, and to whom the public is already indebted for several ingenious inventions, has just now patented a new pen, which promises to have important advantages, without being in any degree costly. These are the retention of a large quantity of ink, sufficient, for example, to write a letter without again dipping the pen, and the prevention of corrosion. Capillary attraction and galvanism are the principles involved, and the means employed are very simple. Within a common iron pen, a small plate of zinc, bent to follow the line of the pen, is secured by points of solder at a short distance from the former, by means of which the ink is securely retained, and a galvanic current is kept up.

The progress of the manufacture of *gold* pens, in America, will serve to show the extent of business which may be done in an article of this kind when successful. The *Charleston Courier* (U.S.), says the first gold pen was made in New York, in 1838, and now the principal manufacturer of them employs a capital of 80,000 dollars in the undertaking. In the manufacture of pens, the gold is first rolled out in ribbons, and then cut with a die to the proper shape, the points put on, and then ground down to the required nib. The points are of iridium, a new metal found with platinum. The points are all imported, generally without the ceremony of an introduction to the Custom-house, and cost from 7 to 55 dollars per ounce. The pens and cases sell from 10 to 30 dollars per dozen. It is not easy to make an estimate of the number of pens manufactured per annum, but it is probably not less than 1,000,000, of which one manufacturer, Bagley, makes nearly half. A person who had not thought of the subject, would scarcely suppose that 800 lbs. of gold were used up every year in America in the manufacture of such a trifling article as pens, a business unknown ten years ago—yet such is the fact. A statement of the *tons* of iron worked into pens in England, every year, would be even more startling, and would show that Dr. Spurgin's improvement, simple as it appears, may, if it fulfil its promises, be more productive than some larger matters.

The endless ladder invented by the same gentleman for raising materials in the course of the erection of buildings, has been used, and is being used in various quarters, but through the mismanagement of an agent, brings nothing to the inventor. Unluckily this is too often the case.

EXPRESSION IN SCULPTURE.

SIR,—An exquisitely chiselled form, without drapery, figures in the catalogue of a collection recently visited, as "Modesty;" yet she looks at you as much as to say, "What do you think of me, now I am naked?" I quarrel not with an occasional want of drapery, but with this indelicate stare (or as indelicate demission of the eye), which clearly shews us that the lady must know that we are inspecting her. Now, Sir, I feel a conception within me of what sort of statue I would make if I were a sculptor, or which I could ever love to look upon. It is this:—Along with that spotless form, and far more engrossing, I see some lovely or striking trait of mind, that the sculptor had for one moment caught, and quick as thought transferred to stone, and fixed it there for ever. The figure appears but that moment (the moment of rest) to have ceased assuming its present attitude, the purpose of which is unmistakeable. She is clearly unconscious that mortal eye is upon her, therefore she does not look upon us; else were the charm broken, and she no longer real,—for since Eve fell, the secret charms of body and mind are not to be seen together. As we gaze we feel, and scarce without compunction, that we are illicit peepers, stealing our enraptured glance at the secret thoughts of that pure being, thus utterly unconscious that eye is upon her—thoughts which she would no more profane, if she knew it, by exposure to others, than she would the virgin charms of her undraped person.

She is apparently of the exact size of life. Her features are of no school cut, but exactly appropriate to the character of emotion described; other features being really incapable of it, in the intensity displayed, and therefore undeceiving the correct eye.

If we have a group, or a male figure, we require the same idea of entire unconsciousness of our gaze, a sort of fairy veil to protect intact, unsullied, the fine thought described. The mind of the figure or figures must be unmistakeably fixed on a definite object,—a Coriolanus must not fume *at us*, as if we were the plebs, or he becomes a strutting actor; but a Napoleon may stand encased in his own cold dignity, although the world be by. Our age excels in delineating expression to its nicest shade. The power has indeed been too much abused to low caricature—but since it exists, we may expect yet to see it displayed in statuary, unequalled for delineating the mind.

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THE GAS MOVEMENT—COST OF GAS.

To the Commissioners of Sewers for the City of London.

GENTLEMEN,—On the 10th February last, in your Court-room, some experiments were made with my gas burner against the bat's-wing. I have to call your attention to the first of them.

You will not fail to remember that Mr. George Lowe, on behalf of the Chartered Gas Company, provided the meters; that he took the choice of meter for either burner—that the officers of the Chartered Gas Company hung up a dark cloth on the wall, at the back of my burner, to prevent reflection—that Mr. Lowe brought his own photometer—that the gas was not purified under my process, and admitted to contain some ammonia.

After a tedious hour in preparation, Mr. George Lowe's experiment was completed. I take from your minutes the results both as to consumption and distances of each burner from Mr. Lowe's photometer.

The mean of two experiments as to consumption of gas was—

	Tenths of a cubic foot.		Tenths of a cubic foot.
Leslie's burner	46·2	The bat's-wing	55·2
	Inches.		Inches.
Distance from Mr. Lowe's photometer.....	146·75	Distance from Mr. Lowe's photometer.....	140·75

The excess of gas wasted by the bat's-wing is thus shewn to be 19·16 per cent.

The excess of light from the diminished quantity of gas is shewn by squaring the two distances from Mr. Lowe's photometer, the square of the bat's-wing being 19,810, the square of the distance from my burner being 21,538, shewing a greater intensity of light from my burner of 8·76 per cent. These facts on your records have entirely escaped the notice of the reporters for the public press; they were elicited by the experiments of my opponents. You will do me the favour to remember that you have not yet seen my experiments.

Here there is demonstrated an enormous waste of gas, as well as a great loss of light, all paid for by the citizens of London. This "waste of gas" will ultimately turn out to be a splendid source of dividend to the shareholders of the Chartered Gas Company (and other companies too), when they are wise enough to look a little more into their own affairs.

Mr. George Lowe, civil engineer to the Chartered Gas Company, has been appointed by her Majesty's Commissioners of Woods and Forests, under the 9th and 10th Victoria, c. 106, to inquire in cases where applications to Parliament are intended for new gas works, or extensions of old gas works. The parties and witnesses are examined upon oath before "the court,"—"the court" reports to the Woods and Forests, with the evidence taken, and both are printed by order of the House of Commons. I have purchased the whole of these reports, and all the evidence. I have selected one case as worthy of your especial attention: it cannot be excepted to by my opponents, because Mr. George Lowe, civil engineer to the Chartered Gas Company in London, was metamorphosed by the Act of Parliament into being "the court" at the Session-house at Liverpool, on the 13th day of February, 1847, when and where he was

"monarch of all he surveyed." I have another equally important reason for selecting this case, it shows a great amount of intellect in the management of the Liverpool Gas Company, and the consequent flourishing condition of the enterprise, that although the charge to the inhabitants is only 4s. 6d. per 1,000 cubic feet, the dividend to the shareholders is 10 per cent., and the quality of the gas so advantageously (to all parties) supplied, is described in the following words in the Liverpool report, bearing the signature of "George Lowe."

"When the quality of the Liverpool gas is tested by the quality of that burnt in other large towns and the price paid for the two, the former being 4s. 6d. per 1,000 cubic feet and the latter 7s. per 1,000 cubic feet, the reference being had to quality alone, the other (the Liverpool gas) would be relatively worth 14s. per 1,000 cubic feet."

The report and evidence shew that it is obligatory on the company to use the best coal and make the purest gas; "that the Company have so done is universally admitted." That the coal used is exclusively cannel coal, at 15s. 6d. per ton; that the yearly average produce from each ton is 9,600 cubic feet of gas, and 13 cwt. of coke; that 211,500,000 cubic feet were made in the previous year, and all accounted for to the shareholders except between 10 and 11 per cent.

On this latter portion of the evidence the report, bearing Mr. Lowe's signature, thus comments:—"In fact, it has been over and over again proved that the leakage is greater than can be accounted for; and that, though it is nominally only 10 per cent., there is as much as 20, and even 25 per cent. of loss which cannot be accounted for."

The report also contains an analytical statement of the 4s. 6d., the cost to the inhabitants of Liverpool of 1,000 cubic feet of gas, in which you will perceive that "the waste" is included; it is as follows:—

	Pence.	
Coal	17·83	
Labour	3·85	
Lime	0·59	
Repairs of works	1·18	
Repairs of mains	0·86	
Repairs of retorts	2·68	
	26·94	
Credit—Coke, tar, &c.	4·85	
	22·09	
Add 10 per cent. (?)	2·20	
	24·29	
Add salaries and office charges	4·25	
	28·54	
Tools	0·67	
Cartage, waste	0·10	
Ropes, blocks, paint, cement, engine caps, and yard charges	0·62	
Rates and taxes	1·10	
Interest and commission	0·60	
Law charges	0·25	
Bad debts	1·43	
	5·45	
	33·99	
£10 per £100-share dividend	20·15	
	54·14	

I will not occupy any more of your valuable time, but again request you to bear in mind that you have not yet seen my experiments in the purification and combustion of gas,—that any evening mutually convenient I shall be most happy to see as many of your court as it may be agreeable to, at these offices, for that purpose.—I have the honour to be, Gentlemen, your obedient servant, JOHN LESLIE.

Offices, 59, Conduit-street,
March 14, 1848.

THE MERITS OF POINTED ARCHITECTURE.

THE opinion of pointed architecture expressed by Mr. Kerr, in his paper on Greek Architecture,* has moved the anger of some of our readers. One correspondent thus writes:—

What! Is the magnificent front of York;—the light elegance of the lanterns at Glo'ster and Ely;—the wonderful balance of support and pressure at the Lady Chapel of Salisbury; and the delicate embroidery of Henry the Seventh's Chapel,—to be charged with 'an ever present *crudeness, and perversion, and lack of grace?*'

Let him pace the solemn aisle or lofty nave, while the warm rays of the setting sun shine soft through the noble windows, chequered and varied by the tracery, piers, and monuments, into a play of tints, which is never to be found in the uniform structure of the Greek; or view the deep shades and softened lights which the pale moonbeam lends to the varied outlines of Salisbury,—or walk along the traceried cloister of Glo'ster, while the solemn anthem fills the vaulted space, and spreads over the soul a soft reverence and deep delight, and is, as it were, re-echoed by every line, by every shade of the lovely pile;—let him view these, and then speak of 'an ever present crudeness and perversion, and *lack of grace.*'

Let it not be supposed that this is the mere effusion of a Romish superstition, or an enthusiastic attachment to the form of religion, that gave rise to these structures;—it is not so. It is written by one who has enjoyed such scenes as he has so feebly attempted to present, and who, in the remembrance of them, still feels that there is, in the elegant and noble Gothic, if not all the accuracy of the Greek, yet a whole more poetic, and I may be excused for adding, to me more lovely.

E. I.

* See p. 99 *ante*.

METROPOLITAN COMMISSION OF SEWERS.

A GENERAL MEETING of the Metropolitan Commissioners of Sewers was held on Thursday morning, last week, Lord Morpeth, M.P., in the chair. Several accounts were presented from the Finance Committee, and ordered to be passed, with the exception of a bill of 90*l.*, from the late Holborn and Finsbury Commissioners of Sewers, for three months "*tavern expenses*," which charge was altogether rejected.

It was agreed that power be granted to the committee to appoint an assistant surveyor, practically acquainted with land drainage.

It was ordered that 460 feet of sewer be made in the Marylebone and Finchley-road; and 860 feet of 12-inch pipe be inserted in an open ditch, receiving the drainage of many houses in Gloucester-street, Shoreditch.

Upon the application of the Great London Drainage Company for permissive powers from this Commission, the following resolutions were reported from the General Purposes Committee:—

"That the refuse matter contained in the sewers of the metropolis should remain under the control of the Metropolitan Commissioners of Sewers."—"That any profits obtainable from such refuse matter should be appropriated, under the sanction of the Commissioners of Sewers, to the diminution of the rates."—"That the Bill of the Great London Drainage Company now before the House would entirely appropriate to this private company, without any compensation, the whole produce of the metropolitan sewers."—"That this Bill would have the effect of entirely superseding the Metropolitan Commission of Sewers."—"That, in the opinion of this commission, no plan of applying the contents of the metropolitan sewers ought to be entertained until the general survey and levels have been completed."

Mr. Chadwick, in support of these resolutions, said it was fortunate for the shareholders in this and similar schemes, that an intervention had been carried on through the powers of this court. By this plan the directors proposed to realise a profit of 50,000*l.* by the refuse of towns, and this was to be done without any return or compensation whatever to the ratepayers. One of the companies proposed the abrogation of two main lines of sewers, through a district where the proportion of sewage matter was only as 1 to 500 of water, and this produce was to be applied to land already surcharged with water. The machinery, too, proposed for effecting this object was excessively expensive, as the estimated cost of one tunnel was 25,000*l.*, whereas it appeared, by the evidence of their own surveyors, that even this could be done at something less than 7,000*l.* The shareholders, therefore, ought to felicitate themselves on the stoppage thus given to wasteful expenditure.—Agreed to.

The clerk reported that, within the last month, the contributions for sewers in the Westminster division amounted to 576*l.* 15s., the largest sum ever received in a like period. He then presented the balance-sheet for the whole of the districts embraced in this commission, which was as follows:—

	Bal. last Ct. £.	s.	d.	Cheques drawn £.	s.	d.	Bal. rem. £.	s.	d.
Westminster	2,420	5	1	1,495	1	2	925	4	9
Holborn & Finsbury	1,553	16	1	230	0	0	1,323	16	1
Tower Hamlets	9,497	14	1	410	0	0	9,087	14	1
Poplar	321	11	1	45	0	0	276	11	1
Surrey and Kent	2,402	7	1	1,331	8	2	1,070	18	11
Greenwich	91	9	3	23	15	0	67	14	3
Total balance							£12,781	19	2

A long memorial was presented from Mr. Stallwood, of Calthorpe-street, Gray's-Inn-road, charging the late Holborn and Finsbury Commissioners of Sewers, generally, with the grossest mal-administration of the funds of the public; and, in particular, with having, during the last thirty years, spent of that money no less a sum than 12,917*l.* *in tavern expenses alone*; that a silver breakfast service had also been purchased for the use of the commissioners out of the rate-payers' money; that the expense of collecting the sewer-rate was more than double that of the poor-rate; that the office expenses for the year ending 1846 were 2,450*l.*, besides several other charges of wasteful expenditure. The memorial concluded with a remark, that it was highly derogatory to the character of gentlemen to apply the moneys collected in many cases from the very poor to eating and drinking at the most expensive taverns; that a strict inquiry into the funds should be instituted, and the silver breakfast service sold for the benefit of the rate-payers.—Referred.

Mr. R. L. Jones presented a report from the district medical officers, on the disgraceful state of Holloway, which was referred to the surveyors.—The Hon. F. Byng, seeing the surveyors for the Surrey and Kent division present, wished to know why such foul and extensive open ditches at Dockhead had been allowed to exist so long.—Mr. Newman said it was a cesspool for a number of tenements, and was not a sewer or a ditch. The agent of the owner of the property had been frequently asked to cleanse it, and he had believed such had been done within two months. The Hon. F. Byng said he had seen it only a short time since, with filth in it six feet deep, and that for at least half a mile in length.

On the 16th the commissioners met again; but we must postpone our notice.

Miscellanea.

QUICK WORK AT DRURY-LANE THEATRE.—The transformation of our national theatre into a circus for French horse-riders was effected with much skill, under the direction of a practised architect in these matters, in a singularly short time. The pit has been covered over to the level of the stage, and a circle formed, partly on the stage and partly over the pit, while the rest of the stage, to a considerable extent backwards, is occupied by rising seats sufficient to contain a large audience, and an orchestra is constructed high up at the back, from under which the performers, bipeds and quadrupeds, enter the arena. The front of the dress-circle, against which the last row of spectators in the pit necessarily lean, is boarded up and covered with red cloth. Shoring to a considerable extent was of course required, under both stage and pit, yet the whole of the work was accomplished in the short space of *five days*, by Messrs. Soward and Son, of Tottenham-court-road. In cases of this sort, the architect is wholly in the hands of his builder: the main thing he has to do, after having arranged his plans, or rather *not* to do, is not to change his mind. Those who carry out his plans with energy deserve praise.

IMPROVED BELL-HANGING.—A short time since we noticed Parker's patent "annunciator" for hotels, mansions, &c., whereby only one bell is required, and the particular room is indicated by a number appearing on the face of the machine. It seems to be a very ingenious and efficient arrangement. In consequence of that notice we have received a letter from Lincoln, signed John Middleton, stating that he has been in the habit of effecting the same thing for a long time past, and pointing to the Palatine Hotel, Manchester, where his arrangement has been in operation for two years, and the Great Northern Hotel, Lincoln, where, in a short time, may be seen forty-four rooms, on two landings, all communicating with two bells. He says,—"I have no intention of patenting my method, and any person is at liberty to examine it, and either carry it out in its integrity or make such improvements as their ingenuity may suggest." At the Holt's Arms Inn, Birmingham, an electric telegraph has been established to supersede bell-ringing. The object is to avoid any trouble to the visitors who frequent the house in calling for refreshment, as indicated on the dial-plate. By turning a handle, which communicates with the wires, the party is enabled to order any refreshment he may require without troubling the servant, and can even request the appearance of the landlord or landlady, as may be requisite!

PROJECTED WORKS, &c.—Tenders have been called for by advertisement for the several artificers' works to be done in erecting the church of the Holy Trinity at Abbots' Leigh; for the erection of an additional wing to the Littlemore Asylum, near Oxford; a lock-up house at Sunnyside, near Hartlepool; a sea wall, 1,000 feet long, with an esplanade, at Ventnor; a stone bridge in Radnorshire; also for laying down footways and paved gutters of Rowley rag-stone at Bromsgrove; for flagging and curbing on footpaths at Bromsgrove; for warming and ventilating additions to Devon county prisons; for the execution of the whole work of a station-house, goods' shed, &c., at Annan, Scotland; and the formation of one and a-half mile of the Taff Vale railway (Rhondda branch); also forthwith for making a survey plan and valuation of the townships of West Dean, Monmouth union.

D'AUBIGNE'S IMPRESSION OF LONDON.—On approaching the capital (on the Dover Railway) my wondering eyes looked down from the carriage into innumerable narrow streets of small houses, all of uniform and mean appearance, blackened with coal-dust, and shrouded by a smoky atmosphere. Such is the gloomy avenue which leads to the delightful parks of the metropolis, its superb squares, magnificent bazaars, and rich palaces. What crowds in the streets, what bustle, what hurry! These carriages, public and private, almost as numerous as the foot-passengers; that dazzling display of every production of British industry and of the most distant lands; those forests of ships, motionless in their immense docks; the steam-boats, which, like a weaver's shuttle, incessantly ply up and down the Thames with inconceivable rapidity, taking up and setting down at every pier a fresh cargo of breathless passengers;—every thing you behold tells you that you are now in the capital of the commercial world. If the German feeds upon the ideal, the practical is the characteristic of Great Britain; I say Britain, because most of what I say of England is applicable to Scotland also. Reality, action, business, bear sway in the politics, the industry, the commerce, and, I will even say, in the religion of the English, yet this practical tendency which characterises England is not selfish, as might have been expected. The large scale on which the people work gives a certain scope and grandeur to the imagination. The habit which the English have of forming into parties, and of looking constantly at themselves as a nation, is opposed to a narrow selfishness; and a most elevated sentiment struggles with this vice in a large portion of the people. Perhaps one of the things that strikes a stranger most on his arrival in London is, not the nobility, but the common people: their strength, their energy, their quickness, their skill, their civility, and above all, their calmness and silence during their unceasing activity. They are all alive to what they are about, and they are clever at it: you can see this in the carriages, the ships, and especially the railroads. The skill with which an English coachman drives you through the streets of London, among thousands of vehicles, without ever jostling you, is inconceivable.

FALL OF RAILWAY ARCHES.—On Wednesday week, seven out of thirteen brick arches, forming part of a viaduct erecting at Manchester by the Lancashire and Yorkshire Railway Company, to connect the lines of that company with the London and North-Western line at Ardwick, gave way. Eight of the arches had been erected before the winter. The centres had been taken from six of the arches, when the seventh arch sprang upwards from the centre and fell, followed momentarily by the whole of the other six. The contractors are Messrs. Noel, Hemingway, and Co. The loss will be about 1,000*l*. The thickness of the masonry was half a brick less than that usually adopted for arches of the same kind, but the accident is attributed to want of scientific knowledge or judgment in the ballasting. On Saturday the entire viaduct over the river Nidd, at Knaresborough, which was nigh being completed, fell in with a tremendous crash. It consisted of four arches (the centres of which had not been removed), each 50 feet span and 80 feet high. The cause remains yet to be explained.

AN ARCHITECT'S OPINION OF THE WINDOW TAX.—At a late meeting in Reading, to petition against the light and health tax, already alluded to in our pages, Mr. W. Brown said:—To talk of taking the duty off glass and retaining the duty on windows, is a left-handed piece of legislation, and a complete putting the cart before the horse. It is not the glass that pays the duty—it is not the opening—it is the light that passes through the opening. It is a misnomer to call it a window tax: it is a light and air tax; not artificial light, but the light of nature—the pure, the holy light of heaven. That is the name by which it should always have been called, and then for very shame it would long since have been repealed. How, then, the taking the duty off glass can be a benefit when the very means are retained which prevents your using it, I am at a loss to imagine. It reminds me of the story of Tantalus holding out the prospect without the possibility of enjoyment. As to the effect the window tax has upon the construction and appearance of buildings I am perhaps better qualified, from a long extended practice as an architect, to form an opinion, than most here present, and I do not hesitate to say that its practical working in this respect is most injurious. Parties for whom I have prepared designs for the constructions of dwelling-houses on a small scale, have first of all inquired whether they were so arranged as to exclude the window duty; and although I have informed them that as few windows as possible consistent with health have been provided, but still more than the Act allows, the answer has been that they would not let if subject to the window duty, and with regret I have been compelled to exclude all light and air from those places which most require it, and where mephitic vapours are chiefly generated. In larger buildings the same question arises, and I have reluctantly sacrificed appearance and cheerfulness without, and healthiness within, to keep down the number of windows. It was this that first drew my attention to the baneful working of this Act—it was this that made me wage war against it. As to the inconvenience felt by those who reside in houses thus constructed, I can speak personally. And here, if you are careless of the matter yourselves, I would claim your attention on behalf of the women of England, who have no voice in the matter, but whose natural protectors you are. They, from their habits and avocations, spend much more of their time within doors than men generally do, and are therefore entitled to be fully supplied with light and air in the exercise of their domestic duties.

DRAINAGE OF THE METROPOLIS.—The following is the title of a bill about to be introduced into Parliament on the part of the Great London Drainage (late London Sewage) Company, by Mr. H. Drummond and Mr. B. Baldwin, viz.:—"A bill to afford means for effectually draining the metropolis; to preserve the Thames from the impurities at present passing into it, by diverting them into subterraneous main channel sewers, and to collect all the produce of the sewers for application to agricultural purposes." The preamble of the bill is to the following effect:—"Whereas it is expedient that powers should be granted for more effectually draining and cleansing the city of London, and the parts adjacent thereto, which lie within the limits hereinafter mentioned, and that provision should be made for interrupting and collecting the sewage water, sulliage, soil, and other refuse matters now discharged within the said limits, through the various sewers, drains, and culverts, into the river Thames, and for adapting and applying the same to the purposes of agriculture, whereby the health of the inhabitants of the metropolis will be greatly promoted, and a valuable manure produced." There are forty-two clauses in the bill.

TO TRANSFER ENGRAVINGS TO WHITE PAPER.—Place the engraving for a few seconds over iodine vapour. Dip a slip of white paper in a weak solution of starch, and when dry, in a weak solution of oil of vitriol. When dry, lay the slip upon the engraving, and place them for a few minutes under a press. The engraving will thus be reproduced in all its delicacy and finish. The iodine has the property of fixing on the black parts or ink of the engraving, and not on the white. This important discovery is yet in its infancy.

COMPETITIONS.—Plans are wanted for a new church in the parish of Edmonton: no specific terms; also designs for the Stonehouse Mechanics' Literary and Scientific Institution: no premiums, but the usual commission.

ANOINTMENT AND INDURATION OF PLASTER, STONE, CEMENT, AND PASTEBOARD.—A patent has been granted to Mr. William Hutchison, of Barnsbury-park, Middlesex, marble merchant, for a foreign method of rendering plaster, pasteboard, porous stone, and other substances, impervious to wet, frost, vermin, or other destructive agencies, and for mashing paper, rags, hemp, ropes, and even hay and straw, and preparing them into substances useful for sheet-roofing, pipes, tiles, &c. The plaster, porous stone, mashed hay, &c., are first shaped as may be desired, then perfectly dried, so as to be highly absorbent; then boiled in a mixture of rosin and oil, grease, &c., or pitch and coal tar, for a time, varying according to their thickness or bulk, and then dried again, and finished off by polishing, &c., according to the nature and purpose of the article. The absorbent mixture may be tinged with various mineral or vegetable colours, or the substance be prepared of a black or other dark colour, as with the pitch, &c. Chalk, alabaster, busts, and even soft and porous wood, may be also treated in the same way, but all must first be dried, so as to ring like metal, and be afterwards boiled in the unguent till it is thoroughly absorbed.

ILLUSTRATIONS OF "DOMBEY AND SON."—Messrs. Chapman and Hall have recently published four *portraits*, to accompany Mr. Dickens's admirable story of "Dombey and Son,"—namely, Alice, Edith, Florence, and Little Paul. They are drawn and partly engraved by Mr. Hablot Knight Browne (*Phiz*), and have very considerable merit. Every buyer of "Dombey" should add them to the volume.

INSTITUTION OF CIVIL ENGINEERS.—At a meeting on the 7th instant, the discussion upon Mr. Redman's paper, "On Dock Entrances," occupied the entire evening, so that no paper could be read. The speakers examined the merits and defects of the several dock entrances in the Thames and in other situations; and the general result appeared to be, that although the engineer must be guided by local circumstances, yet that in situations where the river was sufficiently wide and the position of the land permitted, an acute angle pointing up the stream was the best for docking vessels with the flood. That the reverse would be the best for undocking ships. In ordinary width of rivers, therefore, the end would be attained by forming a bay sufficiently deep to render the water still in front of the dock, the wing wall being so much splayed as virtually to give the directions up and down the stream, as circumstances required. Mr. Chubb exhibited an iron box for the transmission of money, bullion, &c., on railways.

DISCOVERY OF LEAD IN CUMBERLAND—PATIENT SEARCH REWARDED.—Recently a fine large vein of lead ore was discovered in the manor of Hartsop, Patterdale, of which the Earl of Lonsdale is lord. It was found by a poor man, a miner, named Hodgson, who, for upwards of twenty-five years, felt convinced that there was a vein in the manor, and who, from time to time during that long period, has searched, and, at last, found it, and who has been presented with a share of it, as a reward for the discovery. The ore is said to be of the best quality.

IRISH MARBLE.—The vessel *Victoria*, arrived in the river Thames from Galway, has brought, as a portion of her general cargo, the large quantity of fifty-three tons of marble, the produce of the county of Galway, Ireland.

CAMBRIDGE ARCHITECTURAL SOCIETY.—At a meeting held on Friday evening, March 3, a paper, communicated by the Rev. P. Freeman, Principal of Chichester Diocesan College, "On Proportion in ancient Gothic Architecture," was read by the rev. president. It was illustrated by numerous diagrams, and contained an examination of the theory propounded by Mr. W. P. Griffith, in his work on this subject, recently published, with an extension of its principles to the case of classical buildings. The president also read some interesting letters on the subject, which he had received from Mr. Dobson.

HAMMERSMITH UNION COMPETITION.—We understand that Mr. R. P. Browne's plan has been chosen as the best. The arrangement is nearly the same as in the Greenwich Union. Twenty-six sets of designs were sent in.

A SURVEYOR IS WANTED in a day or two for the Hereford Turnpike Trust, with a salary of 250*l.* to 300*l.* a year.

TENDERS

Delivered for a church and parsonage-house to be built at Penge, near Sydenham station:—

	Church.	House.
Keast and Moon	£5,800	£1,590
Pritchard	5,224	1,089
R. Robinson	4,838	1,815
Curtis	4,572	1,632
Higgs	4,446	1,565
Myers	4,058	1,519

For baths, &c., for the establishment in St. Martin's-in-the-Fields:—

Bramah and Prestage	£2,290 0 0
Burbidge and Healy	2,219 19 10
Mather	1,656 12 4
Freeman Roe	1,551 0 0
Cottam and Hallen	1,494 0 0

MEETINGS OF SCIENTIFIC BODIES

Held during the ensuing week.

MONDAY, March 20.—Institute of British Architects, 8 P.M.

TUESDAY, 21.—Institution of Civil Engineers, 8 P.M.

THURSDAY, 23.—Royal Society, 8½ P.M.; Society of Antiquaries, 8 P.M.

FRIDAY 24.—Archæological Association, 8½ P.M.: Architectural Association.

TO CORRESPONDENTS.

"*Half-Acre.*"—The letter contains no reason why the addition may not be made. Take proper advice.

"*Constant Reader.*"—Apply at the school, Somerset-house.

"*J. W.*"—There is a copy in the library of the Institute of Architects.

"*Old Subscriber.*"—We have not time to supply such individual information as he asks for.

Received.—"J. I." "Feltham." "H. B." "P. H. F." "S. S." (shall appear), "J. C." "J. F. W." "A. B. H." "J.T.W." "Novice." "H. B." "C. R." "W. H. D." "A Reader." "J. H." "Revue Generale de l'Architecture," No. 9, vol. 7. "People's Library of Science and Art," Nos. 1 and 2 (Blakelock), "Principles of Geometry, Mensuration, Land Surveying, &c." for schools, &c. By Thomas Tate. Longman and Co. "Second Report of Metropolitan Sanitary Commission."

"*Books, Prices, and Addresses.*"—We have not time to point out books or find addresses.

ADVERTISEMENTS.

NOTICE to ARTISTS and MANUFACTURERS of the USEFUL and ORNAMENTAL ARTS, and to PATENTEES of NEW INVENTIONS, especially of WORKING MODELS which can be put in motion.—ROYAL POLYTECHNIC INSTITUTION, incorporated by Royal Charter in 1838.—The Directors beg to acquaint the above parties that the Institution, during the present month of March, will RECEIVE DEPOSITS of WORKS of MERIT. By means of extensive well-lighted additions to the premises, works of art will be arranged and exhibited with greatly increased advantage to the depositors. It is determined as far as may be practicable, that a separate table, or glass case, shall be appropriated to each Depositor who forwards illustrations of the process of his manufacture with his finished work. Parties will be furnished with full particulars at the Institution, 309, Regent street; if by personal application, from eleven to one o'clock.

The INSTITUTION will be RE-OPENED to the Public early in April next. R. J. LONGBOTTOM, Secretary.

GENERAL PRACTICAL SCHOOL OF ART, at the New Gallery, 79, Newman-street, Oxford-street; Mr. J. M. LEIGH, Master. The above School is now open of a Morning, with Classes for Ladies, and of an Evening for Gentlemen. Prospectuses, &c., may be obtained at the Gallery; and of Mr. R. W. HERMAN, Hon. Sec., 24, Green-street, Grosvenor-square.

ESTIMATING BUILDERS' WORK.

MR. REID, Author of "The Young Surveyor's Preceptor," continues to give PRIVATE and CONFIDENTIAL INSTRUCTION in Measuring and Estimating every description of Builders' Work, and making out and Valuing Bills of Quantities. Mr. R. also takes a select number of young Pupils to instruct in Drawing, Measuring, Estimating, and in making out Builders' Accounts, and qualifies them expeditiously for Salary Clerks in Builders' and Surveyors' offices. Terms very moderate.—38, Red Lion-square, Holborn.

TO ARCHITECTS.—COMPETITION AND OTHER DRAWINGS.

MR. THOMAS S. BOYS, Member of the New Society of Painters in Water Colours, and author of "The Picturesque Architecture of Paris, Ghent, Rouen, &c." and of "London as it is," offers his services in Tinting Backgrounds, Landscapes, Perspective Views, Interiors, &c. From the long experience he has had in such subjects, he is fully aware of the points essentially necessary to be attended to. Drawings and designs lithographed in a superior manner.—Address, Mr. BOYS, 81, Great Titchfield-street, Oxford-street.

TO ARCHITECTS, BUILDERS, &c.

P. DOWLING, Modeller and Scagliola Manufacturer, begs leave to say that he continues to get his Work up in such a superior style, with Low Prices, added with expedition, that he is deserving of patronage. Specimens to be seen at No. 12 Drury-lane, in the following Capitals of the different Orders:—Centre Flowers, Enrichments of every description.

P. D.'s style of Scagliola, both in imitation of Marble aided with a brilliant Polish, which produces an article superior to any yet offered to the public.

By Her Majesty's Royal Letters Patent.

BAILLIE'S PATENT ROUNDED RIM LOCKS, WITH SECRET AND SECURE FIXINGS.

THIS CHEAP and USEFUL ARTICLE obviating the unsightly appearance and insecurity of the common rim lock, can be obtained from the Manufacturers, Messrs. CARPENTER and TILDESLEY, Willenhall; or from the sole Agent, Mr. JOHN PAULKNER, Ironmonger, 69, St. Martin's-le-Grand, London, opposite the new Money-Order Office.

PORTER'S CORRUGATED and PATENT GALVANIZED IRON ROOFING WORKS, Southwark-bridge (and the Grove), Southwark. At the above Works, the Public are secure in having the superior make, and by the Patent process of Galvanizing Iron as first introduced into this Country, with many improvements in its application to Roofs, Buildings, &c. Every description of Building, Railway, and other Iron and Smith's work Manufactured of the best quality. Iron and Fence Hurdles as usual.—The Trade supplied.

TO ARCHITECTS, BUILDERS, AND BRICK-MAKERS.

PUMPS of Superior CONSTRUCTION, bored perfectly true by improved machinery, in various plain and ornamental patterns for Conservatories, Squares, Market Places, Roads, Gardens, and for Liquid Manure. BRICK-MAKERS' PUMPS, in Wrought and Cast Iron, HYDRAULIC LIFT PUMPS, and ENGINES for Wells of any depth. SINGLE and DOUBLE PUMPS up to twelve-inch bore, kept for Hire.

BENJ. FOWLER, 63, Dorset-street, Fleet-street.

IRON-WORK FOR BAKERS' OVENS.

F. A. TIDDEMAN, Purfleet Wharf, Earl Street, Blackfriars, keeps an assortment of Stocks, or Mouthpieces; Plates, Furnace-bars, Top and Fall Pieces, Stoppers, Chimney-bars, Inside, Outside, and Ash-pit; Doors and Frames, Boilers and Frames, Lamps, &c., &c.; all of the best description, at very moderate prices.—CAST-IRON UPSETS.

BURBIDGE and HEALY, 130, FLEET-STREET, LONDON, beg respectfully to inform the Building Public that they fit up COOKING ARRANGEMENTS for large Mansions, with patent appliances on scientific principles, which ensure greater economy and efficiency than hitherto attained. Also HOT WATER APPARATUS, upon improved and scientific principles, which they recommend for its peculiar safety for the Warming of Mansions, &c.

They fit up Laundries with Hot Water Apparatus, for Drying in a cleanly, expeditious, and safe manner. They also fit up BATHS with elegant arrangements, with every modern scientific improvement. Also Apparatus for the plentiful supply of Hot Water for Baths and general use of Mansions and large establishments.

TO ARCHITECTS, BUILDERS, &c.

R. HENLY and Co., WHOLESALE IRONMONGERS, and Manufacturers of KITCHEN-RANGES, STOVES, &c., 186, Blackfriars-road, and 117, Union-street, Borough.

Strong Self-acting Kitchen Ranges, with Back Boiler and Oven, and Wrought Bars:—

3 ft.	3 ft. 3 in.	3 ft. 6 in.	3 ft. 9 in.	4 ft.
£3. 6s.	£3. 13s.	£3. 16s.	£4.	£4. 10s.

Henly's Patent Improved, with back Boiler and Wrought Iron Oven:—

3 ft.	3 ft. 3 in.	3 ft. 6 in.	3 ft. 9 in.	4 ft.
£5.	£5. 15s.	£6. 5s.	£6. 10s.	£7.

Best Register Stoves, at 7d., 8½, and 9d. per inch.
Do. Elliptic do., at 3½d., and 4d. do.

Manufacturer of WOLFASTON'S PATENT REGISTER STOVES, a certain cure for SMOKY CHIMNEYS, and effecting a great saving in fuel. To be seen in use daily.

Orders from the Country, accompanied with a remittance or reference, will meet with prompt attention.

TO BUILDERS and CARPENTERS.—Elliptic Stoves, double backs, 3d. per inch. Registers, 6½d., 7d., 8½ per inch.

Cottage Ranges, with Oven and Back Boiler, 3 ft., 33s.; 3 ft. 9 42s.; 3 ft. 4, 44s.; 3 ft. 6, 46s.

Self-acting Ranges, with Circular Oven and Back Boiler, best Wrought Bars and Bright Fittings,
3 ft., £3. 3s. 3 ft. 6, £3. 12s. 6d. 4 ft., £4.

Best Patent Cut Clasp.

5d.	6d.	8d.	11d.	1s. 4d.	1s. 10d. per 1,000.
3d.	4d.	6d.	8d.	10d.	20d.

Best Sheet Floor Brads 14s. per cwt.
Best Town Glue 38s. Do. Scotch, 32s. per cwt.

Best Patent Sash Line.

4s. 3d.	5s.	6s. 6d.	7s. 6d.	10s.	12s. per gross.
1	2	3	4	5	6

At F. R. WILLIAMSON'S IRONMONGERY and STOVE WAREHOUSE, 55, Chiswell-street, Finsbury-square.

Lists of Prices had on application at the Warehouse; if by letter pre-paid, inclosing postage stamp.

OLD-ESTABLISHED WHOLESALE IRONMONGERY WAREHOUSE, Kitchen-range, and Stove-grate Manufactory, 18, Cross-street, Walworth.

JOHN GRICE most respectfully solicits the attention of Architects, Builders, and Carpenters, to his Stock of Black and Bright Stoves, Kitchen Ranges, &c., &c.

Black Registers, from 6½d. per in. and upwards.
Bright ditto with Black and Bright Bars, 8d. per in. and upwards.
Self-acting Kitchen Ranges, with Oven and Back Boiler, Wrought Bars, Fittings Bright:—

3 ft.	3ft. 6 in.	4 ft.
£2. 9s.	£3. 14s.	£4. 5s.

All articles made on the premises and warranted, and delivered free of expense within five miles of London. Bell-hanging in superior style, hung in secret, 9s. per pull.

R. FULKES, Wholesale Ironmonger, Stove and Range Manufacturer, 21, Park-street, Camden Town, London.

Best Cut Clasp Nails, 10s. per cwt.
Best Cast Lath Nails, 11s. 6d. per cwt.
Best 6 inch Mortice Locks, with large Brass Furniture.
Fitted with Duces' Patent Spindles, 36s. per dozen.
Best Butt Hinges, 2 in. 2½ in. and 3 in.

1s. 2d.	1s. 9d.	2s. 6d. per dozen pair.

Elliptic Stoves, 3d. per inch.
Register Stoves, 6½d. per inch.
Best Self-acting Ranges, fitted complete—

3 ft.	3 ft. 6 in.	4 ft.
£2. 17s. 6d.	£3. 7s. 6d.	£3. 15s. 0d. each.

Orders from the country, containing a remittance or Post-office order made payable at the Camden Town Post-office, forwarded same day.

TO BUILDERS AND CARPENTERS.

BURT and POTTS, York-street, Westminster, Wholesale and Retail Ironmongers, Smiths and Stove Grate Manufacturers. Delivered free within five miles.

Cast Iron Rain-water Pipe:—

2 in.	2½ in.	3 in.	3½ in.	4 in.
1s. 1d.	1s. 3d.	1s. 5d.	1s. 9d.	2s. 2d. per yard.

Sheet Floor Brads, 14s. per cwt. All other Nails in proportion.
Register Stoves with inside backs, 6½d. and 7d. per inch, and upwards.
A variety of Best Black Ground and Bright Register Stoves.
Elliptic Stoves, with inside back, 3½d. per in.
Self-acting Ranges with Circular Ovens, Back Boilers, and Wrought Bars:—

3 ft.	3 ft. 6 in.	4 ft.
£3.	£3. 8s.	£3. 15.

Iron and Steel of every description.

IRONMONGERY WAREHOUSE, 18, Blandford-street, Manchester-square, leading from Baker-street, Portman-square.

TO BUILDERS and CARPENTERS.—In consequence of the recent reduction in the Price of Iron, the following are the present Prices of Nails, &c., at the above Warehouse:—

Best Patent Cut Clasp.

4d.	6d.	10d.	20d. per 1,000.
6d.	8d.	1s. 4d.	1s. 10d. „

Cast Butts.

2 in.	2½ in.	3 in.	
11d.	1s. 2d.	1s. 4d.	2s. per doz

Also Best Patent Sash Line.

3	4	5	6 per doz. knots.
6s. 6d.	7s. 6d.	10s.	12s.

Every other article equally reasonable.

Catalogues of Prices can be had on pre-paid application, inclosing postage stamps.—Country orders will meet with immediate attention, and will be executed either upon the receipt of a remittance for the same, or of a satisfactory reference in London.

JOHN and EDWIN YOUNG, Proprietors.

SMITH and ENGLISH, ENGINEERS, BUILDERS, MACHINISTS, IRON and BRASS FOUNDERS, and GENERAL MANUFACTURERS,

PRINCES-STREET, LEICESTER-SQUARE, LONDON.

CAST-IRON PIPES, for Gas, Water, or Drainage, 1½ to 12 inches diameter, with every requisite connection. Lamp Columns and Sewer Grates of various patterns. Wrought-iron Tubing of an approved manufacture. In stock at KELLY and WHITES, Iron Wharf, 66, Bankside, London.

Girders, Columns, and Castings of any description to pattern or drawing.

RAIN-WATER PIPES, Heads, Shoes, and Elbows, Half-round and O G Gutters, Sash Weights, Railing Bars, Sink and Stable Traps and Gratings, Air Bricks, Coal Plates, &c.; Gas and Water Pipes from 1½ inch. to 12 in. in diameter, with Bends, Branches, Syphons, and Lamp Columns; also Hot-water Pipes, with all the usual connections. A large Stock of the above Castings at JONES'S Iron Bridge Wharf, No. 6, Bankside, Southwark.

FLEXIBLE PIPES AND TUBING, FOR PUMPS, ENGINES, GAS, &c.

PATENT VULCANIZED INDIA-RUBBER HOSE-PIPE and TUBING of every description. These Pipes are made to stand hot liquor and gas without injury; and as they do not become stiff in the coldest temperatures, or require any application when out of use, are particularly well adapted for Fire-Engines. Vulcanized India-rubber Washers for steam and hot-water joints, &c., of all sizes.—Sole Manufacturer, JAS. LYNE HANCOCK, Goswell-mews, Goswell-road, London.

IRON FOUNDRY, 9, Brick-lane, Old-street, St. Luke's.—J. JONES having made great additions to his STOCK OF PATTERNS, begs to inform the Trade, that he can now supply them with Plain and Ornamental Iron Columns, Girders, Railings, Gates, Iron Coping, Balconies, Window Guards, Verandahs, Ornamental Staircase Panels, Iron Staircases, Tomb Enclosures, Trellis Panelling, Lamp and other Brackets, Cantilevers, Newel Bars, Water Closet Work, Area Gratings, Fly and other Wheels, Wheel Plates, &c.

BAKER'S OVEN WORK, Forge Backs and Troughs, Rain Water Pipes and Gutters, Sash Weights, Furnace Bars, Stoves, Ranges, &c., always in stock.

IRON FOUNDRY,

168, DRURY-LANE, and CHARLES-STREET, DRURY-LANE.

JOSEPH GLOVER,

Solicits the attention of the Trade to his extensive Stock of PATTERNS for CASTINGS of EVERY DESCRIPTION, consisting of those for every purpose, either structural or ornamental.

Wheel Pinion and Steam-Engine Patterns; Range Stove and Hot Plate Metal.

A stock of Rain-Water Pipes, Plain and O G Guttering, Air Bricks, Sash Weights, &c. &c.

A very superior description of Soot Door, particularly suitable for internal work, being perfectly secure, and not unsightly.

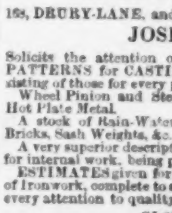
ESTIMATES given for IRON ROOFING and every description of Ironwork, complete to specification, and the work executed with every attention to quality and dispatch.

GLOVER'S FOUNDRY,

168, DRURY-LANE, and CHARLES-STREET.

TO ARCHITECTS, BUILDERS, &c.

COPPER-WIRE CORD.—R. S. NEWALL and Co.'s PATENT IMPROVED COPPER-WIRE CORD for WINDOW SASH LINES, Hot-houses, Lightning Conductors, Hanging Pictures, Clock Cord, and various other purposes for which hempen rope has hitherto been used. This new and valuable Patent is fast superseding the use of the hempen cord, and is strongly recommended to all builders and other parties connected with the above. The Wire Cord may be had wholesale, and specimens seen at the office of the Patentees, No. 163, Fenchurch-street. W. T. ALLEN, Agent; or retail of G. and J. DEANE, 46, King William-street, and E. PARKS, 149, Fleet-street; also of all respectable Ironmongers.



DR. ARNOTT'S CHIMNEY VENTILATOR.

F. EDWARDS, Stove Maker to her Majesty, 39, Poland-street, Oxford-street, begs to call the attention of Architects, Builders, Gas-fitters and the Public, to the truly invaluable advantages to be derived from the use of Dr. Arnott's Valve for the Ventilation of Rooms of every description.

Prices from 7s. 6d. to 20s. each. A prospectus, containing full particulars, to be had on application.

SMOKY CHIMNEYS—NO CURE, NO PAY.

Twenty-five years' extensive experience in all the branches of a stove manufacturing business, and the cure of smoky chimneys of every description, fully justifies F. E. in stating that he can undertake the cure of smoky chimneys on the above equitable terms.

GRANT'S PATENT ROTARY WIND-GUARD, for the prevention of Down Draughts and cure of Smokey Chimneys, by discharging a Strong Current of Air at the Mouth of Chimney-Pot. The attention of the Public and the Trade is respectfully solicited to this simple Apparatus. The Patentees guarantee its effecting the purposes named. Let the wind blow from what quarter it may, it is not liable to derangement; can be easily and cheaply applied, and does not in any way interfere with the Sweeping the Chimney. —Manufactured by the Patentees, LAMBERT and GRANT, 21, Elizabeth-street, Eaton-square.

WILSON and Co.'s PATENT VENTILATING CHIMNEY-POT, for the Cure of Smoky Chimneys, has been tested extensively throughout the Kingdom for the last three years, and has proved to be an effectual remedy.

The Patent Pots cannot corrode or get out of order, and can be effectually swept by the sweep's machine.

J. W. and Co. had the honour of fixing upwards of fifty of the Patent Ventilating Chimney Pots, in artificial Stone Cement, on the chimneys of Buckingham Palace; since which a number have been fixed at Windsor Castle.

The Patent Pots have proved to be the most effectual invention ever yet discovered, and also unrivalled for their ornamental appearance; they are manufactured of artificial Stone Cement, Iron, or Zinc.

The Trade supplied with them at the Manufactory.

VALE PLACE, HAMMERSMITH, MIDDLESEX.

Inquiries from the Country to be addressed to Messrs. Wilson and Co., at their Manufactory, as above. Prices and prospectuses forwarded by return of post.

N.B. Licenses granted to Manufacturers.

ELDRED'S ART EXPOSITION, for the Promotion of English Talent, for Manufactures and Commerce, 168, New Bond-street.—The intention is (as far as possible) that constantly shall be placed before the public all productions of British design and manufacture, justly shewing the great improvement that has lately been introduced into manufactures connected with the Fine Arts, and if these productions are appreciated and patronised, "Great Britain" may assume an Artistic station proportionate to her rank in Manufacturing skill.—London, adjoining the Clarendon.

PROJECTED WORKS, &c.—Tenders have been called for by advertisement for the several artificers' works to be done in erecting the church of the Holy Trinity at Abbots' Leigh; for the erection of an additional wing to the Littlemore Asylum, near Oxford; a lock-up house at Sunnyside, near Hartlepool; a sea wall, 1,000 feet long, with an esplanade, at Ventnor; a stone bridge in Radnorshire; also for laying down footways and paved gutters of Rowley rag-stone at Bromsgrove; for flagging and curbing on footpaths at Bromsgrove; for warming and ventilating additions to Devon county prisons; for the execution of the whole work of a station-house, goods' shed, &c., at Annan, Scotland; and the formation of one and a-half mile of the Taff Vale railway (Rhondda branch); also forthwith for making a survey plan and valuation of the townships of West Dean, Monmouth union.

D'AUBIGNE'S IMPRESSION OF LONDON.—On approaching the capital (on the Dover Railway) my wondering eyes looked down from the carriage into innumerable narrow streets of small houses, all of uniform and mean appearance, blackened with coal-dust, and shrouded by a smoky atmosphere. Such is the gloomy avenue which leads to the delightful parks of the metropolis, its superb squares, magnificent bazaars, and rich palaces. What crowds in the streets, what bustle, what hurry! These carriages, public and private, almost as numerous as the foot-passengers; that dazzling display of every production of British industry and of the most distant lands; those forests of ships, motionless in their immense docks; the steam-boats, which, like a weaver's shuttle, incessantly ply up and down the Thames with inconceivable rapidity, taking up and setting down at every pier a fresh cargo of breathless passengers;—every thing you behold tells you that you are now in the capital of the commercial world. If the German feeds upon the ideal, the practical is the characteristic of Great Britain; I say Britain, because most of what I say of England is applicable to Scotland also. Reality, action, business, bear sway in the politics, the industry, the commerce, and, I will even say, in the religion of the English, yet this practical tendency which characterises England is not selfish, as might have been expected. The large scale on which the people work gives a certain scope and grandeur to the imagination. The habit which the English have of forming into parties, and of looking constantly at themselves as a nation, is opposed to a narrow selfishness; and a most elevated sentiment struggles with this vice in a large portion of the people. Perhaps one of the things that strikes a stranger most on his arrival in London is, not the nobility, but the common people: their strength, their energy, their quickness, their skill, their civility, and above all, their calmness and silence during their unceasing activity. They are all alive to what they are about, and they are clever at it: you can see this in the carriages, the ships, and especially the railroads. The skill with which an English coachman drives you through the streets of London, among thousands of vehicles, without ever jostling you, is inconceivable.

FALL OF RAILWAY ARCHES.—On Wednesday week, seven out of thirteen brick arches, forming part of a viaduct erecting at Manchester by the Lancashire and Yorkshire Railway Company, to connect the lines of that company with the London and North-Western line at Ardwick, gave way. Eight of the arches had been erected before the winter. The centres had been taken from six of the arches, when the seventh arch sprang upwards from the centre and fell, followed momentarily by the whole of the other six. The contractors are Messrs. Noel, Hemingway, and Co. The loss will be about 1,000*l*. The thickness of the masonry was half a brick less than that usually adopted for arches of the same kind, but the accident is attributed to want of scientific knowledge or judgment in the ballasting. On Saturday the entire viaduct over the river Nidd, at Knaresborough, which was nigh being completed, fell in with a tremendous crash. It consisted of four arches (the centres of which had not been removed), each 50 feet span and 80 feet high. The cause remains yet to be explained.

AN ARCHITECT'S OPINION OF THE WINDOW TAX.—At a late meeting in Reading, to petition against the light and health tax, already alluded to in our pages, Mr. W. Brown said:—To talk of taking the duty off glass and retaining the duty on windows, is a left-handed piece of legislation, and a complete putting the cart before the horse. It is not the glass that pays the duty—it is not the opening—it is the light that passes through the opening. It is a misnomer to call it a window tax: it is a light and air tax; not artificial light, but the light of nature—the pure, the holy light of heaven. That is the name by which it should always have been called, and then for very shame it would long since have been repealed. How, then, the taking the duty off glass can be a benefit when the very means are retained which prevents your using it, I am at a loss to imagine. It reminds me of the story of Tantalus holding out the prospect without the possibility of enjoyment. As to the effect the window tax has upon the construction and appearance of buildings I am perhaps better qualified, from a long extended practice as an architect, to form an opinion, than most here present, and I do not hesitate to say that its practical working in this respect is most injurious. Parties for whom I have prepared designs for the constructions of dwelling-houses on a small scale, have first of all inquired whether they were so arranged as to exclude the window duty; and although I have informed them that as few windows as possible consistent with health have been provided, but still more than the Act allows, the answer has been that they would not let if subject to the window duty, and with regret I have been compelled to exclude all light and air from those places which most require it, and where mephitic vapours are chiefly generated. In larger buildings the same question arises, and I have reluctantly sacrificed appearance and cheerfulness without, and healthiness within, to keep down the number of windows. It was this that first drew my attention to the baneful working of this Act—it was this that made me wage war against it. As to the inconvenience felt by those who reside in houses thus constructed, I can speak personally. And here, if you are careless of the matter yourselves, I would claim your attention on behalf of the women of England, who have no voice in the matter, but whose natural protectors you are. They, from their habits and avocations, spend much more of their time within doors than men generally do, and are therefore entitled to be fully supplied with light and air in the exercise of their domestic duties.

DRAINAGE OF THE METROPOLIS.—The following is the title of a bill about to be introduced into Parliament on the part of the Great London Drainage (late London Sewage) Company, by Mr. H. Drummond and Mr. B. Baldwin, viz.:—"A bill to afford means for effectually draining the metropolis; to preserve the Thames from the impurities at present passing into it, by diverting them into subterraneous main channel sewers, and to collect all the produce of the sewers for application to agricultural purposes." The preamble of the bill is to the following effect:—"Whereas it is expedient that powers should be granted for more effectually draining and cleansing the city of London, and the parts adjacent thereto, which lie within the limits hereinafter mentioned, and that provision should be made for interrupting and collecting the sewage water, sulliage, soil, and other refuse matters now discharged within the said limits, through the various sewers, drains, and culverts, into the river Thames, and for adapting and applying the same to the purposes of agriculture, whereby the health of the inhabitants of the metropolis will be greatly promoted, and a valuable manure produced." There are forty-two clauses in the bill.

TO TRANSFER ENGRAVINGS TO WHITE PAPER.—Place the engraving for a few seconds over iodine vapour. Dip a slip of white paper in a weak solution of starch, and when dry, in a weak solution of oil of vitriol. When dry, lay the slip upon the engraving, and place them for a few minutes under a press. The engraving will thus be reproduced in all its delicacy and finish. The iodine has the property of fixing on the black parts or ink of the engraving, and not on the white. This important discovery is yet in its infancy.

COMPETITIONS.—Plans are wanted for a new church in the parish of Edmonton: no specific terms; also designs for the Stonehouse Mechanics' Literary and Scientific Institution: no premiums, but the usual commission.

ANOINTMENT AND INDURATION OF PLASTER, STONE, CEMENT, AND PASTEBOARD.—A patent has been granted to Mr. William Hutchison, of Barnsbury-park, Middlesex, marble merchant, for a foreign method of rendering plaster, pasteboard, porous stone, and other substances, impervious to wet, frost, vermin, or other destructive agencies, and for mashing paper, rags, hemp, ropes, and even hay and straw, and preparing them into substances useful for sheet-roofing, pipes, tiles, &c. The plaster, porous stone, mashed hay, &c., are first shaped as may be desired, then perfectly dried, so as to be highly absorbent; then boiled in a mixture of rosin and oil, grease, &c., or pitch and coal tar, for a time, varying according to their thickness or bulk, and then dried again, and finished off by polishing, &c., according to the nature and purpose of the article. The absorbent mixture may be tinged with various mineral or vegetable colours, or the substance be prepared of a black or other dark colour, as with the pitch, &c. Chalk, alabaster, busts, and even soft and porous wood, may be also treated in the same way, but all must first be dried, so as to ring like metal, and be afterwards boiled in the unguent till it is thoroughly absorbed.

ILLUSTRATIONS OF "DOMBEY AND SON."—Messrs. Chapman and Hall have recently published four *portraits*, to accompany Mr. Dickens's admirable story of "Dombey and Son,"—namely, Alice, Edith, Florence, and Little Paul. They are drawn and partly engraved by Mr. Hablot Knight Browne (*Phiz*), and have very considerable merit. Every buyer of "Dombey" should add them to the volume.

INSTITUTION OF CIVIL ENGINEERS.—At a meeting on the 7th instant, the discussion upon Mr. Redman's paper, "On Dock Entrances," occupied the entire evening, so that no paper could be read. The speakers examined the merits and defects of the several dock entrances in the Thames and in other situations; and the general result appeared to be, that although the engineer must be guided by local circumstances, yet that in situations where the river was sufficiently wide and the position of the land permitted, an acute angle pointing up the stream was the best for docking vessels with the flood. That the reverse would be the best for undocking ships. In ordinary width of rivers, therefore, the end would be attained by forming a bay sufficiently deep to render the water still in front of the dock, the wing wall being so much splayed as virtually to give the directions up and down the stream, as circumstances required. Mr. Chubb exhibited an iron box for the transmission of money, bullion, &c., on railways.

DISCOVERY OF LEAD IN CUMBERLAND—PATIENT SEARCH REWARDED.—Recently a fine large vein of lead ore was discovered in the manor of Hartsop, Patterdale, of which the Earl of Lonsdale is lord. It was found by a poor man, a miner, named Hodgson, who, for upwards of twenty-five years, felt convinced that there was a vein in the manor, and who, from time to time during that long period, has searched, and, at last, found it, and who has been presented with a share of it, as a reward for the discovery. The ore is said to be of the best quality.

IRISH MARBLE.—The vessel *Victoria*, arrived in the river Thames from Galway, has brought, as a portion of her general cargo, the large quantity of fifty-three tons of marble, the produce of the county of Galway, Ireland.

CAMBRIDGE ARCHITECTURAL SOCIETY.—At a meeting held on Friday evening, March 3, a paper, communicated by the Rev. P. Freeman, Principal of Chichester Diocesan College, "On Proportion in ancient Gothic Architecture," was read by the rev. president. It was illustrated by numerous diagrams, and contained an examination of the theory propounded by Mr. W. P. Griffith, in his work on this subject, recently published, with an extension of its principles to the case of classical buildings. The president also read some interesting letters on the subject, which he had received from Mr. Dobson.

HAMMERSMITH UNION COMPETITION.—We understand that Mr. R. P. Browne's plan has been chosen as the best. The arrangement is nearly the same as in the Greenwich Union. Twenty-six sets of designs were sent in.

A SURVEYOR IS WANTED in a day or two for the Hereford Turnpike Trust, with a salary of 250*l.* to 300*l.* a year.

TENDERS

Delivered for a church and parsonage-house to be built at Penge, near Sydenham station:—

	Church.	House.
Keast and Moon	£5,800	£1,590
Pritchard	5,224	1,689
R. Robinson	4,838	1,815
Curtis	4,572	1,632
Higgs	4,446	1,565
Myers	4,058	1,519

For baths, &c., for the establishment in St. Martin's-in-the-Fields:—

Bramah and Prestage	£2,290	0	0
Burbidge and Healy	2,219	19	10
Mather	1,656	12	4
Freeman Roe	1,551	0	0
Cottam and Hallen	1,494	0	0

MEETINGS OF SCIENTIFIC BODIES

Held during the ensuing week.

MONDAY, March 20.—Institute of British Architects, 8 P.M.

TUESDAY, 21.—Institution of Civil Engineers, 8 P.M.

THURSDAY, 23.—Royal Society, 8½ P.M.; Society of Antiquaries, 8 P.M.

FRIDAY 24.—Archæological Association, 8½ P.M.: Architectural Association.

TO CORRESPONDENTS.

"*Half-Acre.*"—The letter contains no reason why the addition may not be made. Take proper advice.

"*Constant Reader.*"—Apply at the school, Somerset-house.

"*J. W.*"—There is a copy in the library of the Institute of Architects.

"*Old Subscriber.*"—We have not time to supply such individual information as he asks for.

Received.—"J. I." "Feltham." "H. B." "P. H. F." "S. S." (shall appear), "J. C." "J. F. W." "A. B. H." "J.T.W." "Novice." "H. B." "C. R." "W. H. D." "A Reader." "J. H." "Revue Generale de l'Architecture," No. 9, vol. 7. "People's Library of Science and Art," Nos. 1 and 2 (Blakelock), "Principles of Geometry, Mensuration, Land Surveying, &c." for schools, &c. By Thomas Tate. Longman and Co. "Second Report of Metropolitan Sanitary Commission."

"*Books, Prices, and Addresses.*"—We have not time to point out books or find addresses.

ADVERTISEMENTS.

NOTICE to ARTISTS and MANUFACTURERS of the USEFUL and ORNAMENTAL ARTS, and to PATENTEES of NEW INVENTIONS, especially of WORKING MODELS which can be put in motion.—ROYAL POLYTECHNIC INSTITUTION, incorporated by Royal Charter in 1839.—The Directors bet to acquaint the above parties that the Institution, during the present month of March, will RECEIVE DEPOSITS of WORKS of MERIT. By means of extensive well-lighted additions to the premises, works of art will be arranged and exhibited with greatly increased advantage to the depositors. It is determined as far as may be practicable, that a separate table, or glass case, shall be appropriated to each Depositor who forwards illustrations of the process of his manufacture with his finished work. Parties will be furnished with full particulars at the Institution, 309, Regent street; if by personal application, from eleven to one o'clock.

The INSTITUTION will be RE-OPENED to the Public early in April next. R. I. LONGBOTTOM, Secretary.

GENERAL PRACTICAL SCHOOL OF ART, at the New Gallery, 79, Newman-street, Oxford street; Mr. J. M. LEIGH, Master. The above School is now open of a Morning, with Classes for Ladies, and of an evening for Gentlemen. Prospectuses, &c., may be obtained at the Gallery; and of Mr. R. W. HERMAN, Hon. Sec., 34, Green street, Grosvenor-square.

ESTIMATING BUILDERS' WORK.

MR. REID, Author of "The Young Surveyor's Preceptor," continues to give PRIVATE and CONFIDENTIAL INSTRUCTION in Measuring and Estimating every description of Builders' Work, and making out and Valuing Bills of Quantities. Mr. R. also takes a select number of young Pupils to instruct in Drawing, Measuring, Estimating, and in making out Builders' Accounts, and qualifies them expeditiously for Salary Clerks in Builders' and surveyors' offices. Terms very moderate.—38, Red Lion-square, Holborn.

TO ARCHITECTS.—COMPETITION AND OTHER DRAWINGS.

MR. THOMAS S. BOYS, Member of the New Society of Painters in Water Colours, and author of "The Picturesque Architecture of Paris, Ghent, Rouen, &c.," and of "London as it is," offers his services in Tinting Backgrounds, Landscapes, Perspective Views, Interiors, &c. From the long experience he has had in such subjects, he is fully aware of the points essentially necessary to be attended to. Drawings and designs lithographed in a superior manner.—Address, Mr. BOYS, 81, Great Titchfield-street, Oxford-street.

TO ARCHITECTS, BUILDERS, &c.

P. DOWLING, Modeller and Scagliola Manufacturer, begs leave to say that he continues to get his Work up in such a superior style, with Low Prices, aided with expedition, that he is deserving of patronage. Specimens to be seen at No. 12 Drury-lane, in the following Capitals of the different Orders:—Centre Flowers, Enrichments of every description.

P. D's style of Scagliola, both in imitation of Marble aided with a brilliant Polish, which produces an article superior to any yet offered to the public.

By Her Majesty's Royal Letters Patent.

BAILLIE'S PATENT ROUNDED RIM LOCKS, WITH SECRET AND SECURE FIXINGS.

THIS CHEAP and USEFUL ARTICLE obviating the unsightly appearance and insecurity of the common rim lock, can be obtained from the Manufacturers, Messrs. CARPENTER and TILDESLEY, Willenhall; or from the sole Agent, Mr. JOHN FAULKNER, Ironmonger, 68, St. Martin's-le-Grand, London, opposite the new Money-Order Office.

PORTER'S CORRUGATED and PATENT GALVANIZED IRON ROOFING WORKS, Southwark-bridge (and the Grove), Southwark. At the above Works, the Public are secure in having the superior make, and by the Patent process of Galvanizing Iron as first introduced into this Country, with many improvements in its application to Roofs, Buildings, &c. Every description of Building, Railway, and other Iron and Smith's work Manufactured of the best quality. Iron and Fence Hurdles as usual.—The Trade supplied.

TO ARCHITECTS, BUILDERS, AND BRICK-MAKERS.

PUMPS of Superior CONSTRUCTION, bored perfectly true by improved machinery, in various plain and ornamental patterns for Conservatories, Squares, Market Places, Ponds, Gardens, and for Liquid Manure. BRICK-MAKERS' PUMPS, in Wrought and Cast Iron. HYDRAULIC LIFT PUMPS, and ENGINES for Wells of any depth. SINGLE and DOUBLE PUMPS up to twelve-inch bore, Kept for Hire.

BENJ. FOWLER, 63, Dorset-street, Fleet-street.

IRON-WORK FOR BAKERS' OVENS.

F. A. TIDDEMAN, Purfleet Wharf, Earl Street, Blackfriars, keeps an assortment of Stocks, or Mouthpieces; Plates, Furnace-bars, Top and Fall Pieces, Stoppers, Chimney-bars, Inside, Outside, and Ash pit; Doors and Frames, Boilers and Frames, Lamps, &c., &c.: all of the best description, at very moderate prices.—CAST-IRON UPSETS.

BURBIDGE and HEALY, 130, FLEET-STREET, LONDON, beg respectfully to inform the Building Public that they fit up COOKING ARRANGEMENTS for large Mansions, with patent appliances on scientific principles, which ensure greater economy and efficiency than hitherto attained. Also HOT WATER APPARATUS, upon improved and scientific principles, which they recommend for its peculiar safety for the Warming of Mansions, &c.

They fit up Laundries with Hot Water Apparatus, for Drying in a cleanly, expeditious, and safe manner. They also fit up BATHS with elegant arrangements, with every modern scientific improvement. Also Apparatus for the plentiful supply of Hot Water for Baths and general use of Mansions and large establishments.

TO ARCHITECTS, BUILDERS, &c.

R. HENLY and Co., WHOLESALE IRONMONGERS, and Manufacturers of KITCHEN-RANGES, STOVES, &c., 196, Blackfriars-road, and 117, Union-street, Borough.

Strong Self-acting Kitchen Ranges, with Back Boiler and Oven, and Wrought Bars:—

3 ft.	3 ft. 3 in.	3 ft. 6 in.	3 ft. 9 in.	4 ft.
£3. 6s.	£3. 15s.	£3. 16s.	£4.	£4. 10s.

Henly's Patent Improved, with back Boiler and Wrought Iron Oven:—

3 ft.	3 ft. 3 in.	3 ft. 6 in.	3 ft. 9 in.	4 ft.
£5.	£5. 15s.	£6. 5s.	£6. 10s.	£7.

Best Register Stoves, at 7d., 8d., and 9d. per inch.
Do. Elliptic do., at 3½d., and 4d. do.

Manufacturer of WOLFASTON'S PATENT REGISTER STOVES, a certain cure for SMOKY CHIMNEYS, and effecting a great saving in fuel. To be seen in use daily.

Orders from the Country, accompanied with a remittance or reference, will meet with prompt attention.

TO BUILDERS and CARPENTERS.—Elliptic Stoves, double backs, 3d. per inch. Registers, 6½d., 7d., 8d. per inch.

Cottage Ranges, with Oven and Back Boiler, 3 ft., 33s.; 3 ft. 2 42s.; 3 ft. 4, 44s.; 3 ft. 6, 46s.

Self-acting Ranges, with Circular Oven and Back Boiler, best Wrought Bars and Bright Fittings,

3 ft., £3. 3s.	3 ft. 6, £3. 12s. 9d.	4 ft., £4.

Best Patent Cut Clasp.

5½.	6d.	8d.	11d.	1s. 4d.	1s. 10d. per 1,000.
5d.	4d.	6d.	8d.	10d.	20d.

Best Sheet Floor Brads 14s. per cwt.
Best Town Glue 28s. Do. Scotch, 32s. per cwt.

Best Patent Sash Line.

4s. 3d.	5s.	6s. 6d.	7s. 6d.	10s.	12s. per gross.
1	2	3	4	5	6

At F. R. WILLIAMSON'S IRONMONGERY and STOVE WAREHOUSE, 57, Chiswell-street, Finsbury-square.

Lists of Prices had on application at the Warehouse; if by letter pre-paid, inclosing postage stamp.

OLD-ESTABLISHED WHOLESALE IRONMONGERY WAREHOUSE, Kitchen-range, and Stove-grate Manufactory, 18, Cross-street, Walworth.

JOHN GRICE most respectfully solicits the attention of Architects, Builders, and Carpenters, to his Stock of Black and Bright Stoves, Kitchen Ranges, &c., &c.

Black Registers, from 6½d. per in. and upwards.
Bright ditto with Black and Bright Bars, 9d. per in. and upwards.
Self-acting Kitchen Ranges, with Oven and Back Boiler, Wrought Bars, Fittings Bright:—

3 ft.	3ft. 6 in.	4 ft.
2l. 15s.	3l. 14s.	4l. 5s.

All articles made on the premises and warranted, and delivered free of expense within five miles of London. Bell-hanging in superior style, hung in secret, 2s. per pull.

R. FULKES, Wholesale Ironmonger, Stove and Range Manufacturer, 21, Park-street, Camden Town, London.

Best Cut Clasp Nails, 16s. per cwt.
Best Cast Lath Nails, 11s. 6d. per cwt.
Best 6 inch Mortice Locks, with large Brass Furniture.
Fitted with Ducest' Patent Spindles, 26s. per dozen.
Best Butt Hinges, 2 in. 2½ in. and 3 in.

1s. 2d.	1s. 6d.	2s. 6d. per dozen pair.

Elliptic Stoves, 3d. per inch.
Register Stoves, 6½d. per inch.

Best Self-acting Ranges, fitted complete—

3 ft.	3 ft. 6 in.	4 ft.
2l. 17s. 6d.	3l. 7s. 6d.	3l. 15s. 0d. each.

Orders from the country, containing a remittance or Post-office order (made payable at the Camden Town Post-office), forwarded same day.

TO BUILDERS AND CARPENTERS.

BURT and POTTS, York-street, Westminster, Wholesale and Retail Ironmongers, Smiths and Stove Grate Manufacturers. Delivered free within five miles.

Cast Iron Rain-water Pipe:—

2 in.	2½ in.	3 in.	3½ in.	4 in.
1s. 1d.	1s. 3d.	1s. 5d.	1s. 9d.	2s. 2d. per yard.

Sheet Floor Brads, 14s. per cwt. All other Nails in proportion.
Register Stoves with inside backs, 6½d. and 7d. per inch, and upwards.
A variety of Best Black Ground and Bright Register Stoves.
Elliptic Stoves, with inside back, 3½d. per in.
Self-acting Ranges with Circular Ovens, Back Boilers, and Wrought Bars:—

3 ft.	3 ft. 6 in.	4 ft.
£3.	£3. 8s.	£3. 15.

Iron and Steel of every description.

IRONMONGERY WAREHOUSE, 18, Blandford-street, Manchester-square, leading from Baker-street, Portman-square.

TO BUILDERS and CARPENTERS.—In consequence of the recent reduction in the Price of Iron, the following are the present Prices of Nails, &c., at the above Warehouse:—

Best Patent Cut Clasp.

4d.	6d.	10d.	20d. per 1,000.
6d.	8d.	1s. 4d.	1s. 10d. "

Cast Butts.

2 in.	2½ in.	2¾ in.	3 in.
11d.	1s. 2d.	1s. 4d.	2s. per doz

Also Best Patent Sash Line.

3	4	5	6 per dos. knots.
6s. 9d.	7s. 6d.	10s.	12s.

Every other article equally reasonable.

Catalogues of Prices can be had on pre-paid application, inclosing postage stamps.—Country orders will meet with immediate attention, and will be executed either upon the receipt of a remittance for the same, or of a satisfactory reference in London.

JOHN and EDWIN YOUNG, Proprietors.

SMITH and ENGLISH, ENGINEERS, BUILDERS, MACHINISTS, IRON and BRASS FOUNDERS, and GENERAL MANUFACTURERS,

PRINCES-STREET, LEICESTER-SQUARE, LONDON.

CAST-IRON PIPES, for Gas, Water, or Drainage, 1½ to 18 inches diameter, with every requisite connection. Lamp Columns and Sewer Grates of various patterns. Wrought-iron Tubing of an approved manufacture. In stock at KELLY and WHITE'S, Iron Wharf, 66, Bankside, London.

Girders, Columns, and Castings of any description to pattern or drawing.

RAIN-WATER PIPES, Heads, Shoes, and Elbows, Half-round and O G Gutters, Sash Weights, Railing Bars, Sink and Stable Traps and Gratings, Air Bricks, Coal Plates, &c.; Gas and Water Pipes from 1½ inch. to 12 in. in diameter, with Bends, Branches, Syphons, and Lamp Columns; also Hot-water Pipes, with all the usual connections. A large Stock of the above Castings at JONES'S Iron Bridge Wharf, No. 6, Bankside, Southwark.

FLEXIBLE PIPES AND TUBING, FOR PUMPS, ENGINES, GAS, &c.

PATENT VULCANIZED INDIA-RUBBER HOSE-PIPE and TUBING of every description. These Pipes are made to stand hot liquor and gas without injury; and as they do not become stiff in the coldest temperatures, or require any application when out of use, are particularly well adapted for Fire-Engines. Vulcanized India-rubber Washers for steam and hot-water joints, &c., of all sizes.—Sole Manufacturer, JAS. LYNE HANCOCK, Goswell-mews, Goswell-road, London.

IRON FOUNDRY, 9, Brick-lane, Old-street, St. Luke's.—J. J. JONES having made great additions to his STOCK OF PATTERNS, begs to inform the Trade, that he can now supply them with Plain and Ornamental Iron Columns, Girders, Railings, Gates, Iron Coping, Balconies, Window Guards, Verandahs, Ornamental Staircase Panels, Iron Staircases, Tomb Enclosures, Trellis Panelling, Lamp and other Brackets, Cantilevers, Newel Bars, Water Closet Work, Area Gratings, Fly and other Wheels, Wheel Plates, &c.

BAKER'S OVEN WORK. Forge Backs and Troughs, Rain Water Pipes and Gutters, Sash Weights, Furnace Bars, Stoves, Ranges, &c., always in stock.

IRON FOUNDRY,

163, DRURY-LANE, and CHARLES-STREET, DRURY-LANE.

JOSEPH GLOVER,

Solicits the attention of the Trade to his extensive Stock of PATTERNS for CASTINGS of EVERY DESCRIPTION, consisting of those for every purpose, either structural or ornamental.

Wheel Pinion and Steam-Engine Patterns; Range Stove and Hot Plate Metal.

A stock of Rain-Water Pipes, Plain and O G Guttering, Air Bricks, Sash Weights, &c. &c.

A very superior description of Soot Door, particularly suitable for internal work, being perfectly secure, and not unsightly.

ESTIMATES given for IRON ROOFING and every description of Ironwork, complete to specification, and the work executed with every attention to quality and dispatch.

GLOVER'S FOUNDRY,

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TO ARCHITECTS, BUILDERS, &c.

COPPER-WIRE CORD.—R. S. NEWALL and Co.'s PATENT IMPROVED COPPER-WIRE CORD for WINDOW SASH LINES, Hot-houses, Lightning Conductors, Hanging Pictures, Clock Cord, and various other purposes for which hempen rope has hitherto been used. This new and valuable Patent is fast superseding the use of the hempen cord, and is strongly recommended to all builders and other parties connected with the above. The Wire Cord may be had wholesale, and specimens seen at the office of the Patentees, No. 163, Fenchurch-street, W. T. ALLEN, Agent; or retail of G. and J. DEANE, 46, King William-street, and E. PARKS, 140, Fleet-street; also of all respectable Ironmongers.

DR. ARNOTT'S CHIMNEY VENTILATOR.

F. EDWARDS, Stove Maker to her Majesty, 20, Poland-street, Oxford-street, begs to call the attention of Architects, Builders, Gas-fitters and the Public, to the truly invaluable advantages to be derived from the use of Dr. Arnott's Valve for the Ventilation of Rooms of every description.

Prices from 7s. 6d. to 20s. each. A prospectus, containing full particulars, to be had on application.

SMOKY CHIMNEYS—NO CURE, NO PAY.

Twenty-five years' extensive experience in all the branches of a stove manufacturing business, and the cure of smoky chimneys of every description, fully justifies F. E. in stating that he can undertake the cure of smoky chimneys on the above equitable terms.

GRANT'S PATENT ROTARY WIND-GUARD, for the prevention of Down Draughts and cure of Smokey Chimneys, by discharging a Strong Current of Air at the Mouth of Chimney-Pot. The attention of the Public and the Trade is respectfully solicited to this simple Apparatus. The Patentees guarantee its effecting the purposes named. Let the wind blow from what quarter it may, it is not liable to derangement; can be easily and cheaply applied, and does not in any way interfere with the Sweeping the Chimney.—Manufactured by the Patentees, LAMBERT and GRANT, 21, Elizabeth-street, Eaton-square.

WILSON and Co.'s PATENT VENTILATING CHIMNEY-POT, for the Cure of Smoky Chimneys, has been tested extensively throughout the Kingdom for the last three years, and has proved to be an effectual remedy.

The Patent Pots cannot corrode or get out of order, and can be effectually swept by the sweep's machine.

J. W. and Co. had the honour of fixing upwards of fifty of the Patent Ventilating Chimney Pots, in artificial Stone Cement, on the chimneys of Buckingham Palace; since which a number have been fixed at Windsor Castle.

The Patent Pots have proved to be the most effectual invention ever yet discovered, and also unrivalled for their ornamental appearance; they are manufactured of artificial Stone Cement, Iron, or Zinc.

The Trade supplied with them at the Manufactory,

VALE PLACE, HAMMERSMITH, MIDDLESEX.

Inquiries from the Country to be addressed to Messrs. Wilson and Co., at their Manufactory, as above. Prices and prospectuses forwarded by return of post.

N.B. Licenses granted to Manufacturers.

ELDRED'S ART EXPOSITION, for the Promotion of English Talent, for Manufactures and Commerce, 168, New Bond-street.—The intention is (as far as possible) that constantly shall be placed before the public all productions of British design and manufacture, justly shewing the great improvement that has lately been introduced into manufactures connected with the Fine Arts, and if these productions are appreciated and patronised, "Great Britain" may assume an Artistic station proportionate to her rank in Manufacturing skill.—London, adjoining the Clarendon.

LAMBETH POTTERY.

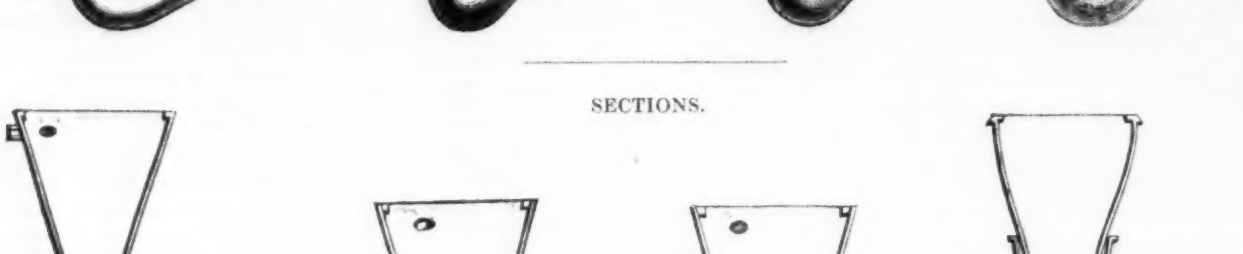
DOULTON AND WATTS, STONE POTTERS,
HIGH-STREET, LAMBETH, LONDON,

MANUFACTURERS OF CHEAP WATER-CLOSET PANS, WITH SYPHON TRAPS, IN GLAZED STONE-WARE,

PRICE 7s. 6d. EACH.

No. 1. No. 2. No. 3. No. 4.

SECTIONS.



The importance of a system of thorough cleansing and drainage; and the application of Water Closets with Traps, *to every house*, is so fully established by the late Parliamentary enquiries, and by public opinion, as to need no enforcement.

The above Pans are of the most simple yet perfect construction: they are cleanly and imperishable; require no metal fans; and the price at which they are offered is so low, as to admit of their universal adoption.

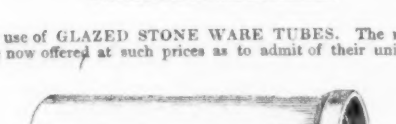
Testimony in favour of the first three of these Closet Pans, and their suitability for general adaptation, may be found in the recent evidence given before the Parliamentary Sanitary Commission, by HENRY AUSTIN, Esq., Consulting Engineer, and JOHN PHILLIPS, Esq., Surveyor to the New Metropolitan Commissioners of Sewers. No. 4, is approved by Major JEBB, and has been extensively supplied in Prisons and Asylums throughout the Kingdom.

TUBULAR DRAINS IN GLAZED STONE WARE,

MANUFACTURED BY

HENRY DOULTON AND CO., POTTERS,
HIGH-STREET, LAMBETH.

The only perfect mode of forming house drains is by the use of GLAZED STONE WARE TUBES. The material of which they are composed is imperishable, impervious to moisture, and cannot corrode; they are easily laid down, and are now offered at such prices as to admit of their universal application. From their anti-corrosive nature these tubes are well adapted for the conveyance of water.



PRICES OF STRAIGHT TUBES WITH SOCKET JOINTS.

In 3 feet lengths.		In 2 feet lengths.				
2 in. bore, 4d.	3 in. 5d.	4 in. 6d.	6 in. 8d.	9 in. 1s. 1½d.	12 in. 1s. 10d.	15 in. 3s. 4d. per foot.

TESTIMONIALS

From Messrs. ROE *and* PHILLIPS, *Surveyors to the New Metropolitan Commissioners of Sewers.*

DEAR SIR,—I would respectfully recommend the building profession generally, in uture to use no other material than Glazed Stoneware Pipes for house drains; and I am quite sure by their so doing, they will be conferring a great boon on public health, and that to an extent they little suppose. I also respectfully submit that there is now no reasonable excuse for their not using them, for it has been proved that as regards strength, durability, and efficiency, there cannot be a better article.—I am, Dear Sir, yours truly,

Mr. H. Doulton. JOHN PHILLIPS.

DEAR SIR,—In reply to your request, I beg to state that Glazed Stoneware Tubular Drains are those which I would in all cases recommend builders or proprietors of houses to use, there being no other material that at this time equals them in efficiency joined with economy.

I am, Dear Sir, yours truly,

JOHN ROE.

Mr. H. Doulton.

Extract from the Evidence of HENRY AUSTIN, Esq., *Consulting Engineer to the New Metropolitan Commission of Sewers.*

I believe that a very considerable part of the question of a perfect system of drainage of towns lies in the consideration of the best material to be used in the formation of drains and sewers, and that any attempt to found a general arrangement in construction of brick will retain many of the present errors. *The glazed pipes are to be preferred in every point of view.* From their even and glassy surface there is a great reduction of friction, and consequent increase of the flow with the same quantities of water which admits of their size being materially reduced. . . . With equal inclination they will keep themselves clearer of deposits, and consequently be free from the present offensive effluvia of the brick sewers and drains, and being perfectly impermeable, all soakage of the neighbouring ground is prevented, and foul emanations from this source obviated. . . . They would forbid the harbouring of rats, and no longer form the channel for the entrance of these disgusting vermin into our houses. . . . They would be much more quickly and economically laid than brick drains, and would afford security against much of the defective and careless construction which now characterizes drainage works. . . . They would require much less excavation both from diminished size and less thickness of material, and they could be laid in loose and treacherous soil, where brickwork would fail without great caution and expense. . . . The pipe drains would never want repair. They would be, in fact, of everlasting durability. The drain pipes of ancient Rome are at the present day perfect, although of far inferior material to vitrified glazed stone ware. . . . They would not only be far less expensive, but they would be what brick drains never can be, perfect in efficiency.